

Technical Information

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The complexity of today's telecommunications, voice and data transmissions has generated an increasing demand for more technical information. In the current business world, customer service representatives, engineers, distributors and end-users do not have the time to search for answers to their technical questions.

To this end, General Cable is including a limited technical section to help simplify these decisions and enable our customers to more expeditiously locate the products needed and answer product-specific questions.

For additional technical information, please contact your sales representative or our customer service department.

NEC and CSA Fire Resistance Levels

FIRE RESISTANCE LEVEL	TEST REQUIREMENT	NEC ARTICLE		
		800	725	760
(Highest) Plenum Cables	UL-910 (Steiner tunnel) CSA-FT6 (Steiner tunnel)	MPP CMP	CL3P CL2P	FPLP
Riser Cables Multiple Floors	UL-1666 (Vertical Shaft) CSA-FT4 (Vertical Tray)	MPR CMR	CL3R CL2R	FPLR
General Purpose Cables	UL-1581 (Vertical Tray) CSA-FT4 (Vertical Tray)	MP CM	CL3 CL2	FPL
(Lowest) Residential Cables Restricted Use	UL-1581 VW-1 CSA-FT	CMX	CL3X CL2X	

Notes: 1. Cables with a higher fire resistance level may be substituted for those with a lower fire resistance level.
 2. Non-fire rated outside plant telephone cables may not run outside of a rigid metal conduit more than 50 feet from the point of entrance into a building.
 3. Cables rated CMG or CM may be used in runs penetrating one floor. (NEC 800-53)

Communications wire and cable for premise installations are in accordance with Article 800, and other applicable parts of the National Electrical Code (NEC), latest issue. Communications wire and cables for Canada are in accordance with the harmonized Canadian Standard Association C22.2 No. 214, Underwriters Laboratories UL 444, latest issue.

Plenum

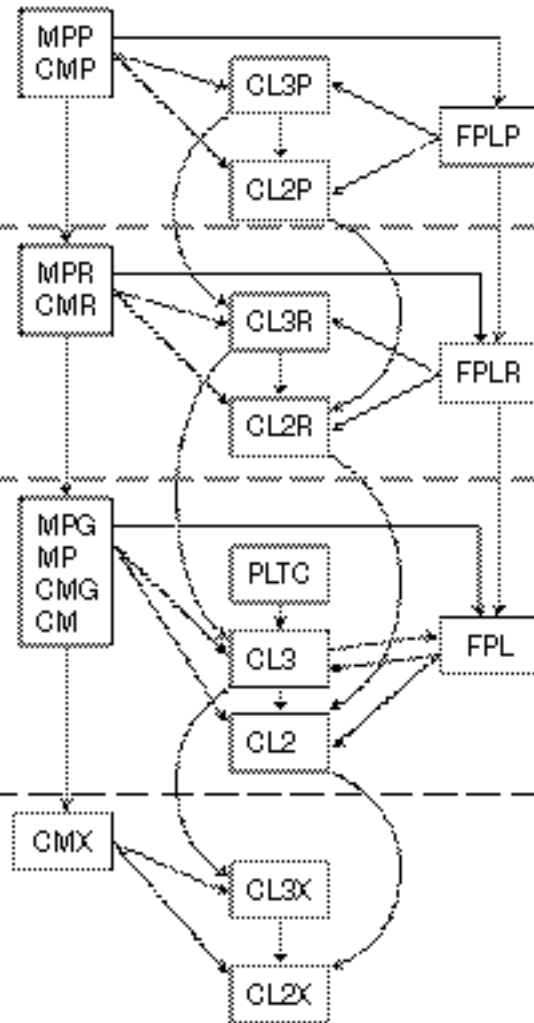
A → **B** Cable A shall be permitted to be used in place of Cable B.

No. 26 minimum for fire alarm use.

Riser

General Purpose

Dwellings



TYPE	DESCRIPTION
CM	Communications Wires and Cables
CL2 and CL3	Class 2 and Class 3 Remote-Control, Signaling, and Power-Limited Cables
FPL	Power-Limited Fire Alarm Cables
MP	Multipurpose Cables
PLTC	Power-Limited Tray Cable

From 1999 NEC

Industry Standards, Typical Uses and Electrical Requirements

For 24 AWG Twisted Pair Horizontal Wiring Cable

CATEGORY	INDUSTRY STANDARDS	TYPICAL USES	FREQUENCY	ATTEN. dB/100M (MAX)	CHARACTERISTICS IMPEDANCE OHMS		NEXT dB(MIN)	PS- NEXT dB(MIN)	STRUCT. RETURN LOSS dB(MIN)	RETURN LOSS dB(MIN)	PS- ELFEXT dB(MIN)
					MIN	MAX					
Category 1*	ANSI/ICEA S-80-576 ANSI/ICEA S-90-661	POTS	-	-	-	-	-	-	-	-	-
Category 2	IBM Type 3 ANSI/ICEA S-80-576	IBM Type 3 – 1 Mbps	256kHz	1.3	90	120	-	-	-	-	-
			512kHz	1.8	87	117.5	-	-	-	-	-
			772kHz	2.2	85	114	-	-	-	-	-
			1MHz	2.6	84	113	-	-	-	-	-
Category 3	ANSI/TIA/EIA 568A ANSI/ICEA S-90-661 NEMA WC63.1	10 BASE-T 4 Mbps TOKEN RING 52 Mbps ATM 100 BASE VG AnyLAN	772kHz	2.2	87	117	43	-	-	-	-
			1MHz	2.6	85	115	41	-	12	-	-
			4MHz	5.6	85	115	32	-	12	-	-
			8MHz	8.5	85	115	28	-	12	-	-
			10MHz	9.7	85	115	26	-	12	-	-
			16MHz	13.1	85	115	23	-	10	-	-
Category 5	ANSI/TIA/EIA 568A ANSI/ICEA S-90-661 NEMA WC63.1	16 Mbps TOKEN RING 100 BASE-T 52/155 Mbps ATM 100 BASE VG AnyLAN 100 Mbps TP PMD	772kHz	1.8	86	117	64	-	-	-	-
			1MHz	2.0	85	115	62	-	23	-	-
			4MHz	4.1	85	115	53	-	23	-	-
			8MHz	5.8	85	115	48	-	23	-	-
			10MHz	6.5	85	115	47	-	23	-	-
			16MHz	8.2	85	115	44	-	23	-	-
			20MHz	9.3	85	115	42	-	23	-	-
			25MHz	10.4	85	115	41	-	22	-	-
			31.25MHz	11.7	85	115	40	-	21	-	-
			62.5MHz	17.0	85	115	35	-	18	-	-
			100MHz	22.0	85	115	32	-	16	-	-
Category 5e	ANSI/TIA/EIA 568A-5 ANSI/ICEA S-90-661 NEMA WC63.1 Proposed TIA/EIA 568B-2	16 Mbps TOKEN RING 100 BASE-T 52/155 Mbps ATM 100 BASE VG AnyLAN 100 Mbps TP PMD 1000 BASE-T (Gigabit Ethernet)	772kHz	1.8	87	117	67	64	-	-	63.0
			1MHz	2.0	85	115	65	62	-	20.0	60.8
			4MHz	4.1	85	115	56	53	-	23.0	48.7
			8MHz	5.8	85	115	51	48	-	24.5	42.7
			10MHz	6.5	85	115	50	47	-	25.0	40.8
			16MHz	8.2	85	115	47	44	-	25.0	36.7
			20MHz	9.3	85	115	45	42	-	25.0	34.7
			25MHz	10.4	85	115	44	41	-	24.3	32.8
			31.25MHz	11.7	85	115	43	40	-	23.6	30.9
			62.5MHz	17.0	85	115	38	35	-	21.5	24.8
			100MHz	22.0	85	115	35	32	-	20.1	20.8
Category 6**	ANSI/TIA/EIA 568A-5 ANSI/ICEA S-90-661 NEMA WC63.1 Proposed TIA/EIA Cat-6 ISO 11801	16 Mbps TOKEN RING 155/622 Mbps ATM 1.2 Gbps ATM 100 Mbps TP PMD 100 BASE-T 1000 BASE-T (Gigabit Ethernet)	772kHz	1.8	87	117	76	74	-	-	67.0
			1MHz	2.0	85	115	74	72	-	20.0	64.8
			4MHz	3.8	85	115	65	63	-	23.0	52.7
			10MHz	6.0	85	115	59	57	-	23.5	44.8
			16MHz	7.6	85	115	56	54	-	25.0	40.7
			20MHz	8.5	85	115	54	52	-	25.0	38.7
			31.25MHz	10.7	85	115	51	49	-	23.6	36.8
			62.5MHz	15.5	85	115	47	45	-	21.5	34.9
			100MHz	19.9	85	115	44	42	-	20.1	24.8
			200MHz	29.2	78	122	40	38	-	18.0	18.7
			250MHz	33.0	78	122	38	36	-	17.3	-

Data subject to change without notice. Contact your Customer Service Representative for latest information.

- No requirement

*: Plain old telephone system.

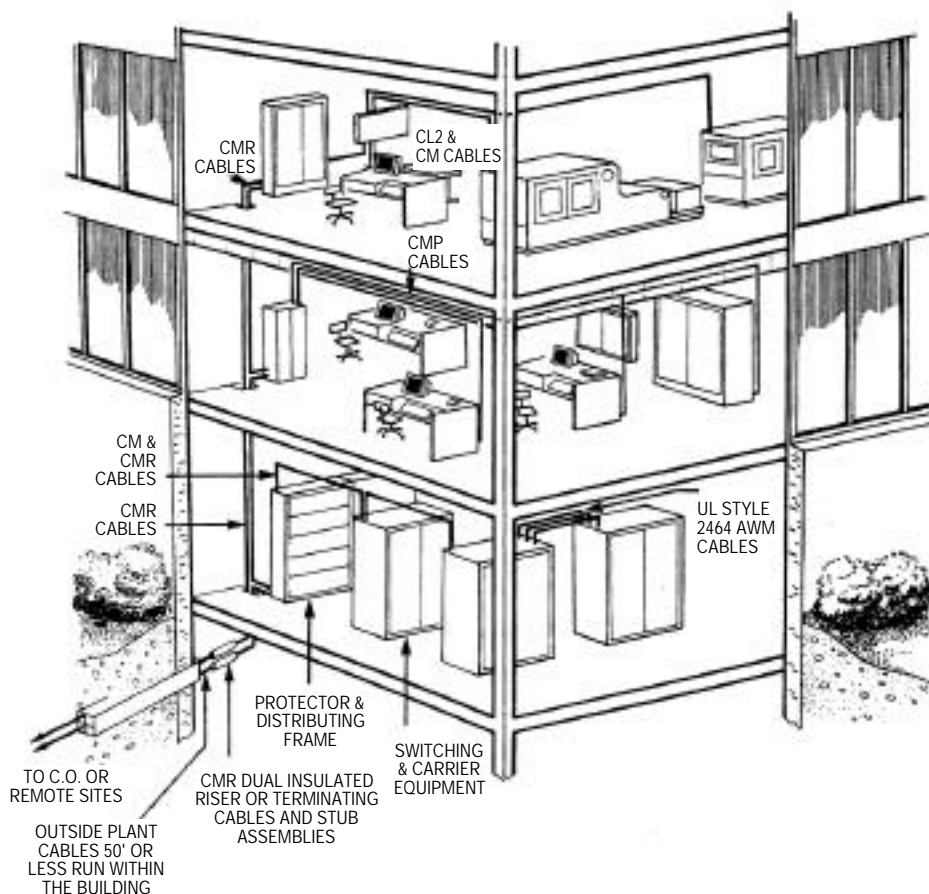
** : Category 6 is under review by TIA/EIA and ISO/IEC.

Note 1: Higher category may be substituted for lower category.

Note 2: For Patch Cord attenuation requirement add 20% to above.

Commercial Building Datacom/Electronic Wiring

UL Listed cable to comply with the National Electrical Code and UL Standard 444



General Cable Products:

Office and Factory Areas:

- Plenum Cable
- Data Cable
- Connector Cables
- Station Wire
- Shielded Pair Cables
- Inside Wiring Cables
- Telephone Cords
- Cross-Connect Wire
- Ground Wire
- Coaxial Cable
- Twinax Cable
- Keyboard Cords
- Pbx Console Cords
- Operator Headset Cords
- Transceiver Cable
- PIC Cable

Computer Room:

- Computer Equipment Cables
- Data Cables
- Shielded Cables
- Coaxial Cables
- Plenum Cables
- Inside Station Wire
- Inside Wiring Cable
- Twinax Cable
- Ground Wire
- Transceiver Cable
- Computer Patch Cords

Telephone Equipment Room:

- Switchboard Cable
- PIC Cable
- Hook-Up Wire
- Distributing Frame Wire
- Jumper Wire
- Ground Wire
- ALVYN Stubs
- Shielded Pair Cable

Unit Conversion Factors

Unit Conversion Factors

UNIT	= CONSTANT	UNIT	UNIT	= CONSTANT	UNIT
BTU	778.0	foot-pound (ft-lb)	gallons	3.785332	liters (l)
BTU	1054.8	joules	gallons	0.13368	cubic foot (ft ³)
BTU	0.293	watt-hours (w-hr)	gallons	231.0	cubic inch (in ³)
centimeters (cm)	0.032808	feet (ft)	gallons	3785.332	cubic centimeter (cm ³)
centimeters (cm)	0.3937	inches (in)	grams (g)	15.432	grains
centimeters (cm)	0.00001	kilometers (km)	gram/centimeter ³ (gm/cm ³)	0.0361275	pounds/in ³ (lb/in ³)
centimeters (cm)	0.010	meters (m)	horsepower (hp)	33000.0	ft-lb/min
centimeters (cm)	10.0	millimeters (mm)	horsepower (hp)	550.0	ft-lb/sec
circular mils	0.00064516	circular millimeters	horsepower (hp)	745.7	watts (w)
circular mils	0.000007854	inches ² (in ²)	inch (in)	0.027178	yards (yd)
circular mils	0.00050671	square millimeters (mm ²)	inch (in)	0.083333	feet (ft)
circular mils	0.7854	mils ²	inch (in)	0.00002540	kilometer (km)
cubic centimeter (cm ³)	0.000035314	cubic foot (ft ³)	inch (in)	0.025400	meter (m)
cubic centimeter (cm ³)	0.061023	cubic inch (in ³)	inch (in)	2.54000514	centimeter (cm)
cubic centimeter (cm ³)	0.000001	cubic meter (m ³)	inch (in)	25.4000514	millimeter (mm)
cubic centimeter (cm ³)	0.0026417	gallons	inch (in)	1000.0	mils
cubic foot (ft ³)	1728.0	cubic inch (in ³)	joules	0.000948	BTU
cubic foot (ft ³)	28317.016	cubic centimeter (cm ³)	joules	10 ⁷	ergs
cubic inch (in ³)	0.00057870	cubic foot (ft ³)	liters (l)	61.0250	cubic inch (in ³)
cubic inch (in ³)	0.000016387	cubic meter (m ³)	meters (m)	1.093611	yard (yd)
cubic inch (in ³)	16.387162	cubic centimeter (cm ³)	meters (m)	3.2808333	feet (ft)
cubic meter (m ³)	1000000.0	centimeter (cm)	meters (m)	39.37	inch (in)
cubic meter (m ³)	35.314456	cubic foot (ft ³)	meters (m)	100.0	centimeter (cm)
cubic meter (m ³)	264.17	gallons	miles	1760.0	yards (yd)
feet (ft)	0.00018939	miles	miles	5280.0	feet (ft)
feet (ft)	0.33333	yards (yd)	miles	1.6093	kilometer (km)
feet (ft)	12	inches (in)	millimeters (mm)	0.0032808	feet (ft)
feet (ft)	0.00030480	kilometers (km)	millimeters (mm)	0.03937	inch (in)
feet (ft)	0.30480	meters (m)	millimeters (mm)	0.001	meters (m)
feet (ft)	30.480	centimeters (cm)	millimeters (mm)	0.01	centimeters (cm)
feet (ft)	304.80	millimeters (mm)	millimeters (mm)	39.3701	mils
feet/pound (ft/lb)	0.00067197	meters/grams (m/g)	millimeters (mm)	1000.0	microns (u)
foot/pound (ft/lb)	0.001285	BTU	watts (w)	44.25	ft-lb/minute
foot/pound (ft/lb)	1.356	joules	watts (w)	0.737562	ft-lb/sec
foot/pound (ft/lb)	0.1383	kilogram/meter (kg/m)	watts (w)	0.001341	horsepower (hp)
			watt-hours (w-hr)	3.41266	BTU

Temperature Conversion Chart

°C KNOWN TEMP °F			°C KNOWN TEMP °F			°C KNOWN TEMP °F			°C KNOWN TEMP °F			°C KNOWN TEMP °F		
-45.0	-49.0	-56.2	-17.2	1.0	33.8	10.6	51.0	123.8	38.3	101.0	213.8	66.1	151.0	303.8
-44.4	-48.0	-54.4	-16.7	2.0	35.6	11.1	52.0	125.6	38.9	102.0	215.6	66.7	152.0	305.6
-43.9	-47.0	-52.6	-16.1	3.0	37.4	11.7	53.0	127.4	39.4	103.0	217.4	67.2	153.0	307.4
-43.3	-46.0	-50.8	-15.6	4.0	39.2	12.2	54.0	129.2	40.0	104.0	219.2	67.8	154.0	309.2
-42.8	-45.0	-49.0	-15.0	5.0	41.0	12.8	55.0	131.0	40.6	105.0	221.0	68.3	155.0	311.0
-42.2	-44.0	-47.2	-14.4	6.0	42.8	13.3	56.0	132.8	41.1	106.0	222.8	68.9	156.0	312.8
-41.7	-43.0	-45.4	-13.9	7.0	44.6	13.9	57.0	134.6	41.7	107.0	224.6	69.4	157.0	314.6
-41.1	-42.0	-43.6	-13.3	8.0	46.4	14.4	58.0	136.4	42.2	108.0	226.4	70.0	158.0	316.4
-40.6	-41.0	-41.8	-12.8	9.0	48.2	15.0	59.0	138.2	42.8	109.0	228.2	70.6	159.0	318.2
-40.0	-40.0	-40.0	-12.2	10.0	50.0	15.6	60.0	140.0	43.3	110.0	230.0	71.1	160.0	320.0
-39.4	-39.0	-38.2	-11.7	11.0	51.8	16.1	61.0	141.8	43.9	111.0	231.8	71.7	161.0	321.8
-38.9	-38.0	-36.4	-11.1	12.0	53.6	16.7	62.0	143.6	44.4	112.0	233.6	72.2	162.0	323.6
-38.3	-37.0	-34.6	-10.6	13.0	55.4	17.2	63.0	145.4	45.0	113.0	235.4	72.8	163.0	325.4
-37.8	-36.0	-32.8	-10.0	14.0	57.2	17.8	64.0	147.2	45.6	114.0	237.2	73.3	164.0	327.2
-37.2	-35.0	-31.0	-9.4	15.0	59.0	18.3	65.0	149.0	46.1	115.0	239.0	73.9	165.0	329.0
-36.7	-34.0	-29.2	-8.9	16.0	60.8	18.9	66.0	150.8	46.7	116.0	240.8	74.4	166.0	330.8
-36.1	-33.0	-27.4	-8.3	17.0	62.6	19.4	67.0	152.6	47.2	117.0	242.6	75.0	167.0	332.6
-35.6	-32.0	-25.6	-7.8	18.0	64.4	20.0	68.0	154.4	47.8	118.0	244.4	75.6	168.0	334.4
-35.0	-31.0	-23.8	-7.2	19.0	66.2	20.6	69.0	156.2	48.3	119.0	246.2	76.1	169.0	336.2
-34.4	-30.0	-22.0	-6.7	20.0	68.0	21.1	70.0	158.0	48.9	120.0	248.0	76.7	170.0	338.0
-33.9	-29.0	-20.2	-6.1	21.0	69.8	21.7	71.0	159.8	49.4	121.0	249.8	77.2	171.0	339.8
-33.3	-28.0	-18.4	-5.6	22.0	71.6	22.2	72.0	161.6	50.0	122.0	251.6	77.8	172.0	341.6
-32.8	-27.0	-16.6	-5.0	23.0	73.4	22.8	73.0	163.4	50.6	123.0	253.4	78.3	173.0	343.4
-32.2	-26.0	-14.8	-4.4	24.0	75.2	23.3	74.0	165.2	51.1	124.0	255.2	78.9	174.0	345.2
-31.7	-25.0	-13.0	-3.9	25.0	77.0	23.9	75.0	167.0	51.7	125.0	257.0	79.4	175.0	347.0
-31.1	-24.0	-11.2	-3.3	26.0	78.8	24.4	76.0	168.8	52.2	126.0	258.8	80.0	176.0	348.8
-30.6	-23.0	-9.4	-2.8	27.0	80.6	25.0	77.0	170.6	52.8	127.0	260.6	80.6	177.0	350.6
-30.0	-22.0	-7.6	-2.2	28.0	82.4	25.6	78.0	172.4	53.3	128.0	262.4	81.1	178.0	352.4
-29.4	-21.0	-5.8	-1.7	29.0	84.2	26.1	79.0	174.2	53.9	129.0	264.2	81.7	179.0	354.2
-28.9	-20.0	-4.0	-1.1	30.0	86.0	26.7	80.0	176.0	54.4	130.0	266.0	82.2	180.0	356.0
-28.3	-19.0	-2.2	-0.6	31.0	87.8	27.2	81.0	177.8	55.0	131.0	256.8	82.8	181.0	357.8
-27.8	-18.0	-0.4	0.0	32.0	89.6	27.8	82.0	179.6	55.6	132.0	269.6	83.3	182.0	359.6
-27.2	-17.0	-1.4	0.6	33.0	91.4	28.3	83.0	181.4	56.1	133.0	271.4	83.9	183.0	361.4
-26.7	-16.0	3.2	1.1	34.0	93.2	28.9	84.0	183.2	56.7	134.0	273.2	84.4	184.0	363.2
-26.1	-15.0	5.0	1.7	35.0	95.0	29.4	85.0	185.0	57.2	135.0	275.0	85.0	185.0	365.0
-25.6	-14.0	6.8	2.2	36.0	96.8	30.0	86.0	186.8	57.8	136.0	276.8	85.6	186.0	366.8
-25.0	-13.0	8.6	2.8	37.0	98.6	30.6	87.0	188.6	58.3	137.0	278.6	86.1	187.0	368.6
-24.4	-12.0	10.4	3.3	38.0	100.4	31.1	88.0	190.4	58.9	138.0	280.4	86.7	188.0	370.4
-23.9	-11.0	12.2	3.9	39.0	102.2	31.7	89.0	192.2	59.4	139.0	282.2	87.2	189.0	372.2
-23.3	-10.0	14.0	4.4	40.0	104.0	32.2	90.0	194.0	60.0	140.0	284.0	87.8	190.0	374.0
-22.8	-9.0	15.8	5.0	41.0	105.8	32.8	91.0	195.8	60.6	141.0	285.8	88.3	191.0	375.8
-22.2	-8.0	17.6	5.6	42.0	107.6	33.3	92.0	197.6	61.1	142.0	287.6	88.9	192.0	377.6
-21.7	-7.0	19.4	6.1	43.0	109.4	33.9	93.0	199.4	61.7	143.0	289.4	89.4	193.0	379.4
-21.1	-6.0	21.2	6.7	44.0	111.2	34.4	94.0	201.2	62.2	144.0	291.2	90.0	194.0	381.2
-20.6	-5.0	23.0	7.2	45.0	113.0	35.0	95.0	203.0	62.8	145.0	293.0	90.6	195.0	383.0
-20.0	-4.0	24.8	7.8	46.0	114.8	35.6	96.0	204.8	63.3	146.0	294.8	91.1	196.0	384.8
-19.4	-3.0	26.6	8.3	47.0	116.6	36.1	97.0	206.6	63.9	147.0	296.6	91.7	197.0	386.6
-18.9	-2.0	28.4	8.9	48.0	118.4	36.7	98.0	208.4	64.4	148.0	289.4	92.2	198.0	388.4
-18.3	-1.0	30.2	9.4	49.0	120.2	37.2	99.0	210.2	65.0	149.0	300.2	92.8	199.0	390.2
-17.8	0.0	32.0	10.0	50.0	122.0	37.8	100.0	212.0	65.6	150.0	302.0	93.3	200.0	392.0

To use this chart, find your known temperature (°F or °C) in the shaded column. If the known temperature is in °C and you wish to know its value in °F, move to the adjacent right-hand column. If the known temperature is in °F and you wish to know its value in °C, move to the adjacent left-hand column.

Temperature Conversion Formulas

°C =	$\frac{5}{9} (F - 32)$
°F =	$(\frac{9}{5} \times C) + 32$

Color Code Chart

Product Specifications:

Inside Wiring Cable:

- 2507** • 4600*
- 4411* • 4485*
- 4462* • 4495*
- 4475* • 4700*
- 4476 • 8009*
- 8480* • 4490
- 6480*

Plenum Cable:

- 4453* • 4467S*
- 4453S* • 8482*
- 4456* • 6482*
- 4458S* • 4496*
- 4459* • 4491
- 4463* • 4601*
- 4463S* • 4701*

Central Office Product:

- 2507
- 4502
- 4513
- 4753
- 4781

* Pair counts 1 through 5, only the tip (white) conductor is bandmarked for these product specifications.

** This product does not utilize bandmarking.

PAIR NO.	RING CONDUCTOR		TIP CONDUCTOR	
	INSULATION COLOR	BAND MARK	INSULATION COLOR	BAND MARK
1	Blue	White	White	Blue
2	Orange	White	White	Orange
3	Green	White	White	Green
4	Brown	White	White	Brown
5	Slate	White	White	Slate
6	Blue	Red	Red	Blue
7	Orange	Red	Red	Orange
8	Green	Red	Red	Green
9	Brown	Red	Red	Brown
10	Slate	Red	Red	Slate
11	Blue	Black	Black	Blue
12	Orange	Black	Black	Orange
13	Green	Black	Black	Green
14	Brown	Black	Black	Brown
15	Slate	Black	Black	Slate
16	Blue	Yellow	Yellow	Blue
17	Orange	Yellow	Yellow	Orange
18	Green	Yellow	Yellow	Green
19	Brown	Yellow	Yellow	Brown
20	Slate	Yellow	Yellow	Slate
21	Blue	Violet	Violet	Blue
22	Orange	Violet	Violet	Orange
23	Green	Violet	Violet	Green
24	Brown	Violet	Violet	Brown
25	Slate	Violet	Violet	Slate

BINDER GROUP COLOR	PAIR COUNT
White-Blue	001-025
White-Orange	026-050
White-Green	051-075
White-Brown	076-100
White-Slate	101-125
Red-Blue	126-150
Red-Orange	151-175
Red-Green	176-200
Red-Brown	201-225
Red-Slate	226-250
Black-Blue	251-275
Black-Orange	276-300
Black-Green	301-325
Black-Brown	326-350
Black-Slate	351-375
Yellow-Blue	376-400
Yellow-Orange	401-425
Yellow-Green	426-450
Yellow-Brown	451-475
Yellow-Slate	476-500
Violet-Blue	501-525
Violet-Orange	526-550
Violet-Green	551-575
Violet-Brown	576-600

Conduit Capacities by Wire or Cable Diameter

	TRADE SIZES IN INCHES ¹											
	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5
I.D., Inches	.622	.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026	4.506	5.047
O.D., Inches-Conduit	.840	1.05	1.315	1.660	1.900	2.375	2.875	3.500	4.000	4.500	5.000	5.563
Internal Area, Sq. In.	.304	.533	.864	1.496	2.036	3.356	4.788	7.393	9.887	12.730	15.947	20.006
Permissible Fill, Sq. In. ²	.12	.21	.35	.60	.81	1.34	1.92	2.96	3.95	5.09	6.38	8.00

WIRE/CABLE O.D. (INCHES)	AREA (SQ. IN.)												
.100	.008	15	27	44	76	103	170	243	376	503	648	812	1018
.125	.012	9	17	28	48	66	109	156	240	322	414	519	652
.150	.018	6	12	19	33	46	75	108	167	223	288	360	452
.175	.024	5	8	14	24	33	55	79	122	164	211	265	332
.200	.031	3	6	11	19	25	42	60	94	125	162	203	254
.225	.040	3	5	8	15	20	33	48	74	99	128	160	201
.250	.049	2	4	7	12	16	27	39	60	80	103	129	163
.275	.059	2	3	5	10	13	22	32	49	66	85	107	134
.300	.071	1	3	4	8	11	18	27	41	55	72	90	113
.325	.083	1	2	4	7	9	16	23	35	47	61	76	96
.350	.096	1	2	3	6	8	13	19	30	41	52	66	83
.375	.110	1	1	3	5	7	12	17	26	35	46	57	72
.400	.126	0	1	2	4	6	10	15	23	31	40	50	63
.425	.142	0	1	2	4	5	9	13	20	27	35	44	56
.450	.159	0	1	2	3	5	8	12	18	24	32	40	50
.475	.177	0	1	1	3	4	7	10	16	22	28	35	45
.500	.196	0	1	1	3	4	6	9	15	20	25	32	40
.525	.216	0	0	1	2	3	6	8	13	18	23	29	36
.550	.238	0	0	1	2	3	5	8	12	16	21	26	33
.575	.260	0	0	1	2	3	5	7	11	15	19	24	30
.600	.283	0	0	1	2	2	4	6	10	13	18	22	28
.625	.307	0	0	1	1	2	4	6	9	12	16	20	26
.650	.332	0	0	1	1	2	4	5	8	11	15	19	24
.675	.358	0	0	0	1	2	3	5	8	11	14	17	22
.700	.385	0	0	0	1	2	3	4	7	10	13	16	20
.725	.413	0	0	0	1	1	3	4	7	9	12	15	19
.750	.442	0	0	0	1	1	3	4	6	8	11	14	18
.775	.472	0	0	0	1	1	2	4	6	8	10	13	16
.800	.503	0	0	0	1	1	2	3	5	7	10	12	15
.825	.535	0	0	0	1	1	2	3	5	7	9	11	14
.850	.567	0	0	0	1	1	2	3	5	6	8	11	14
.875	.601	0	0	0	0	1	2	3	4	6	8	10	13
.900	.636	0	0	0	0	1	2	3	4	6	8	10	12
.925	.672	0	0	0	0	1	1	2	4	5	7	9	11
.950	.709	0	0	0	0	1	1	2	4	5	7	8	11
.975	.747	0	0	0	0	1	1	2	3	5	6	8	10
1.000	.785	0	0	0	0	1	1	2	3	5	6	8	10

¹ Table developed for steel or aluminum conduit.

² Permissible occupied area based on NEC prescribed 40% fill factor.

• For cables with flat cross-section, the cross-sectional area calculation shall be based upon the area of a rectangle (W X H).

• The reader is cautioned to consult the NEC for specific information regarding conduit fill.

Conduit Capacities by Wire or Cable Diameter

	TRADE SIZES IN INCHES ¹											
	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5
I.D., Inches	.622	.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026	4.506	5.047
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Permissible Fill, Sq. In. ²	.12	.21	.35	.60	.81	1.34	1.92	2.96	3.95	5.09	6.38	8.00

WIRE/CABLE O.D. (INCHES)	AREA (SQ. IN.)												
1.025	.785	0	0	0	0	1	1	2	3	5	6	8	10
1.050	.825	0	0	0	0	0	1	2	3	4	6	7	9
1.075	.866	0	0	0	0	0	1	2	3	4	5	7	9
1.100	.908	0	0	0	0	0	1	2	3	4	5	7	8
1.125	.950	0	0	0	0	0	1	2	3	4	5	6	8
1.150	.994	0	0	0	0	0	1	1	2	3	5	6	8
1.175	1.039	0	0	0	0	0	1	1	2	3	4	6	7
1.200	1.084	0	0	0	0	0	1	1	2	3	4	5	7
1.225	1.131	0	0	0	0	0	1	1	2	3	4	5	7
1.250	1.179	0	0	0	0	0	1	1	2	3	4	5	6
1.275	1.227	0	0	0	0	0	1	1	2	3	4	5	6
1.300	1.277	0	0	0	0	0	1	1	2	3	3	4	6
1.325	1.327	0	0	0	0	0	1	1	2	2	3	4	6
1.350	1.379	0	0	0	0	0	0	1	2	2	3	4	5
1.375	1.431	0	0	0	0	0	0	1	2	2	3	4	5
1.400	1.485	0	0	0	0	0	0	1	1	2	3	4	5
1.425	1.539	0	0	0	0	0	0	1	1	2	3	4	5
1.450	1.595	0	0	0	0	0	0	1	1	2	3	3	5
1.475	1.651	0	0	0	0	0	0	1	1	2	3	3	4
1.500	1.709	0	0	0	0	0	0	1	1	2	2	3	4
1.525	1.767	0	0	0	0	0	0	1	1	2	2	3	4
1.550	1.827	0	0	0	0	0	0	1	1	2	2	3	4
1.575	1.887	0	0	0	0	0	0	1	1	2	2	3	4
1.600	1.948	0	0	0	0	0	0	0	1	2	2	3	4
1.625	2.011	0	0	0	0	0	0	0	1	1	2	3	3
1.650	2.074	0	0	0	0	0	0	0	1	1	2	3	3
1.675	2.138	0	0	0	0	0	0	0	1	1	2	2	3
1.700	2.204	0	0	0	0	0	0	0	1	1	2	2	3
1.725	2.270	0	0	0	0	0	0	0	1	1	2	2	3
1.750	2.337	0	0	0	0	0	0	0	1	1	2	2	3
1.775	2.405	0	0	0	0	0	0	0	1	1	2	2	3
1.800	2.474	0	0	0	0	0	0	0	1	1	2	2	3
1.825	2.545	0	0	0	0	0	0	0	1	1	2	2	3
1.850	2.616	0	0	0	0	0	0	0	1	1	1	2	3
1.875	2.688	0	0	0	0	0	0	0	1	1	1	2	2
1.900	2.761	0	0	0	0	0	0	0	1	1	1	2	2
1.925	2.910	0	0	0	0	0	0	0	1	1	1	2	2
1.950	2.986	0	0	0	0	0	0	0	0	1	1	2	2
1.975	3.064	0	0	0	0	0	0	0	0	1	1	2	2
2.000	3.142	0	0	0	0	0	0	0	0	0	1	1	2

¹ Table developed for steel or aluminum conduit.

² Permissible occupied area based on NEC prescribed 40% fill factor.

- For cables with flat cross-section, the cross-sectional area calculation shall be based upon the area of a rectangle (W X H).
- The reader is cautioned to consult the NEC for specific information regarding conduit fill.

Abbreviations and Acronyms

Abbreviations

AM	Amplitude Modulation
ATM	Asynchronous Transfer Mode
AUI	Attachment Unit Interface
AWG	American Wire Gauge
bit	One Binary Digit
CO	Central Office
CRT	Cathode Ray Tube
Cu	Copper
DTE	Data Terminal Equipment
EAX	Electronic Automatic Exchange
EMI	Electromagnetic Interference
FDM	Frequency Division Multiplexing
FM	Frequency Modulation
ISDN	Integrated Services Digital Network
ISP	Inside Plant
LAN	Local Area Network
MAN	Metropolitan Area Network
MAU	Medium Attachment Unit
Mbps	Megabits per Second
NEXT	Near-End Crosstalk
OSP	Outside Plant
PABX	Private Automatic Branch Exchange
PBX	Private Branch Exchange
PDN	Private Data Network
PSI	Pounds per Square inch
PVC	Polyvinyl Chloride
RF	Radio Frequency
RFI	Radio Frequency Interference
RS	Recommended Standard
SDLC	Synchronous Data Link Control
SNA	Systems Network Architecture
TDM	Time Division Multiplexing
TP-PMD	Twisted Pair - Physical Medium Dependent
TPDDI™	Twisted Pair Distributed Data Interface
UL	Underwriters Laboratories
WAN	Wide Area Network
XC	Cross-Connect
XD	Extended Distance (Category 4)
XF	Extended Frequency (Category 5)

Acronyms

AFCEA	Armed Forces Communications and Electronics Association
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BICSI	Building Industry Consulting Services International
BOC	Bell Operating Company
CCITT	Consultative Committee of International Telegraph and Telephone
CSA	Canadian Standards Association
EAX	Electronic Automatic Exchange
EIA	Electronics Industries Alliance
FCC	Federal Communications Commission
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronics Engineers
NATA	North American Telephone Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
OSHA	Occupational Safety & Health Act
RBOC	Regional Bell Operating Company
RCDD	Registered Communications Distribution Designer
REA	Rural Electrification Administration
TIA	Telecommunications Industry Association (Associated with EIA & USTA & USTSA)
UL	Underwriters Laboratories
USTA	United States Telephone Association
USTSA	United States Telephone Suppliers Association

Surface Printed Legend

FOR CATEGORIES 2, 3 & 5 INSIDE WIRING CABLE & PLENUM CABLE

These cables have surface printed jackets to provide a means of identifying and distinguishing between transmission categories. The identifier for each product category will be CAT followed by the related category number.

Example:

GENERALCABLE C MPR/CMR 4PR 24 (UL) IWC CAT-2 000002

Plant Location ———— Number of Pairs ———— AWG Size ———— Sequential Footage Markers

MPR = UL Multipurpose Riser CM = UL Communications
 CMR = UL Communications Riser MP = UL Multipurpose
 MPP = UL Multipurpose Plenum CMX = UL Communications
 CMP = UL Communications Outdoor
 Plenum (UL) = UL Listed

Note 1: Category 1 product will not have a category identifier.

Note 2: Legend repeats at MAX 3 foot intervals.

Glossary

Abrasion Resistance: Resistance to surface wear.

AC Alternating Current (a.c.): Current in which the charge-flow periodically reverses and is represented by: $i = I_o \cos(2\pi f + \phi)$ where, i is the current, I_o is the amplitude, f the frequency, ϕ the phase angle.

Accelerated Aging: A test that attempts to duplicate long time environmental aging in comparatively short time spans.

Accelerator: A chemical additive which hastens a chemical reaction under specific conditions.

Accordian: (1) A retractile cable with a series of equally-spaced transverse folds. (2) A connector contact with a "Z" shaped flat spring to permit high deflection without overstress.

Adapter: A device that enables any or all of the following a) different sizes or types of plugs to mate with one another or to fit into a telecommunications outlet/connector; b) the rearrangement of leads; c) large cables with numerous wires to fan out into smaller groups of wires, d) interconnection between cables.

Adhesive Bonded: Cables bonded by adding an adhesive coating to the surface of the cable components, then joining and curing the adhesive to form a cable. See Bonded Cables.

Administration: The method for labeling, identification, documentation and usage needed to implement moves, additions and changes of the telecommunications infrastructure.

Admittance: The measure of the ease with which an alternating current flows in a circuit. The reciprocal of impedance.

Aerial Cable: A cable suspended in the air on poles or other overhead structure.

Aging: The change in properties of a material with time under specific conditions.

Air Core Cable: A cable in which the interstices in the cable core are not filled with a moisture barrier.

Air-Handling Plenum: A designated area, closed or open, used for environmental air.

Air Spaced Coaxial Cable: One in which air is essentially the dielectric material. A spirally wound synthetic filament, beads, or braided filaments may be used to center the conductor.

All-Rubber Cable: A cable in which all interstices between conductors are filled with rubber compound.

Alligator Clip: A mechanical device shaped like alligator jaws used as a temporary connection on the sod of interconnections wire.

Alloy: A metal formed by combining two or more different metals to obtain desirable properties.

Aluminum Conductor: An aluminum wire or group of wires not suitably insulated to carry electrical current.

Aluminum-Steel Conductor: A composite conductor made up of a combination of aluminum and steel wires.

Ambient Temperature: The temperature of a medium (gas or liquid) surrounding an object.

American Wire Gauge (AWG): The standard system used for designating wire diameter. The lower the AWG number, the larger the diameter. Also called the Brown and Sharpe (B&S) wire gauges.

Ampacity: See Current Carrying Capacity.

Ampere: The unit of current. One ampere is the current flowing through one ohm of resistance at one volt potential.

Analog: A signaling format that uses continuous physical variables such as voltage amplitude or frequency variations to transmit information.

Anneal: Relief of mechanical stress through heat and gradual cooling. Annealing copper renders it less brittle.

Annular Conductor: A number of wires stranded in three reversed concentric layers around a core.

Annunciator: A signaling device, usually electrically operated, that gives an audible or visual signal (or both) when energized.

Anti-Oxidant: A substance which prevents or slows down oxidation of material exposed to air.

Appliance Wire and Cable: A classification covering insulated wire and cable for internal wiring of appliances and equipment.

Arc Resistance: The time required for an arc to establish a conductive path in a material.

Armored Cable: A cable provided with a wrapping of metal for mechanical protection.

Attenuation: The decrease in magnitude of the power of a signal in transmission between points. Attenuation is usually measured in decibels per unit length at a specific frequency.

Attenuation to Crosstalk Ratio (ACR): The difference between attenuation and crosstalk, measured in dB, at a given frequency. Important characteristic in networking transmission to assure that signal sent down a twisted pair is stronger at the receiving end, after being attenuated, than are any interference signals imposed on that same pair by crosstalk from other pairs, represented by NEXT.

Audio Frequency: The range of frequencies audible to the human ear. Usually 20-20,000 Hz.

Backbone: A facility (e.g. pathway, cable or conductors) between telecommunications closets, or floor distribution terminals, the entrance facilities, and the equipment rooms within or between buildings.

Backbone Cable or Wire: Cable or wire found in the backbone, see Backbone.

Balanced Line: A cable having two identical conductors which carry voltages opposite in polarity and equal in magnitude with respect to ground.

Balun: A device for matching an unbalanced coaxial transmission line to a balanced two-wire system.

Band Marking: A continuous circumferential band applied to a conductor at regular intervals for identification.

Banded Cable: Two or more cables banded together by stainless steel strapping.

Bandwidth: A continuous range of frequencies extending between two limiting frequencies. Also referred to as a Frequency Band.

Barrel-Packed: Method of coiling into a fiber drum for shipment.

Baseband: In data transmission, the use of a dedicated end to end connection to carry a single channel only.

Beaded Coax: Coaxial cable with a dielectric consisting of beads made of various materials.

Belt: Number of layers of insulation on a conductor, or number of layers of jacket on a cable.

Belted-Type Cable: Multiple conductor cable having a layer of insulation over the assembled insulated conductors.

Bend Loss: A form of increased attenuation caused by (a) having an optical fiber curved around a restrictive radius of curvature or (b) microbends caused by minute distortions in the fiber imposed by externally induced forces.

Bend Radius: Radius of curvature that a fiber optic or metallic cable can bend without any adverse effects.

Bifilar: A winding made non-inductive by winding together (as one wire) two wires carrying current in opposite directions.

Billion Conductor Feet (BCF): A quantity derived by multiplying the number of conductors in a cable by the amount of cable. Usually used to indicate plant capacity or an annual requirement.

Bimetallic Wire: A wire formed of two different metals joined together (not alloyed). It can include wire with a steel core clad wire, or plated or coated wire.

Binder: A spirally served tape or thread used for holding assembled cable components in place awaiting subsequent manufacturing operations.

Binding Post: A device for clamping or holding electrical conductors in a rigid position.

Bit: One binary (0 or 1) digit.

Blown Jacket: Outer cable covering applied by controlled inflation of the cured jacket tube then pulling the cable through it.

Bond Strength: Amount of adhesion between bonded surfaces, e.g. in cemented ribbon cable.

Bondable Wire: An insulated wire treated to facilitate adherence to materials such as potting compounds. Also, magnet wires used in making coils when bonding the turns together is desired.

Bonded Cable: Cable consisting of pre-insulated conductors or multiconductor components laid in parallel and bonded into a flat cable. See Solvent-Bonded, Adhesive-Bonded, Film Bonded.

Bonded Construction: An insulation construction in which the glass braid and nylon jacket are bonded together.

Glossary

Bonding: The permanent joining of metallic parts to form an electrically conductive path that will assure electrical continuity and the capacity to conduct safely any current likely to be imposed on it.

Booster: A device inserted into a line (or cable) to increase the voltage.

Boot: (1) Protective covering over a cable, wire, or connector in addition to the normal jacketing or insulation. (2) A form placed around wire termination of a multiple-contact connector to contain the liquid potting compound before it hardens.

Braid: A fibrous or metallic group of filaments interwoven in cylindrical form to form a covering over one or more wires.

Braid Angle: The smaller of the two angles formed by the shielding strand and in the axis of the cable being shielded.

Braid Carrier: A spool or bobbin on a braid which holds one group of strands or filaments consisting of a specific number of ends. The carrier revolves during braiding operations.

Braid Ends: The number of strands used to make up one carrier. The strands are wound side by side on the carrier bobbin and lie parallel in the finished braid.

Braiding Machine: Machine used to apply braids to wire and cable and to produce braided sleeving and braids for tying or lacing purposes. Braiding machines are identified by the number of carriers.

Breakdown (puncture): A disruptive discharge through the insulation.

Breakdown Voltage: The voltage at which the insulation between two conductors breaks down.

Breakout: The point at which a conductor or group of conductors breaks out from a multiconductor cable to complete circuits at various points along the main cable.

Bridge: A device used to expand a local area network by forwarding frames between data link layers.

Bridged Tap: The multiple appearances of the same cable pair at several distribution points.

British Standard Wire Gauge: A modification of the Birmingham Wire Gauge and the legal standard of Great Britain for all wires. Also known as Standard Wire Gauge (SWG), New British Standard (NBS), English Legal Standard and Imperial Wire Guide.

Broadband: In data transmission, the use of a carrier signal, rather than direct modulation, to carry several simultaneous channels.

Buffer: (fiber optic) A soft material which mechanically isolates individual fibers in a fiber optic cable or bundle from small geometrical irregularities, distortions, or roughness of adjacent surfaces.

Buffing Stripper: A motorized device for removing flat cable insulation by means of buffing wheels that melt the insulation and brush it away from the conductors. Also called Abrasion Stripper.

Building Entrance Area: See Entrance Room or Space, Telecommunications.

Building Wire: Wire used for light and power, 600 volts or less, usually not exposed to outdoor environment.

Bunched Stranding: A group of strands twisted together in a random manner and the same direction without regard to geometric arrangement of specific strands.

Buncher: A machine that twists wires together in random arrangement.

Bundle: (fiber optic) A number of fibers grouped together, usually carrying a common signal.

Buried Cable: A cable installed directly in the earth without use of underground conduit. Also called Direct Burial Cable.

Bus: Wire used to connect two terminals inside of an electrical unit.

Bushing: A mechanical device used as a lining for an opening to prevent abrasion to wire and cable.

Butt: Joining of two conductors end-to-end, with no overlap and with the axes in line.

Butt Splice: A splice wherein two wires from opposite ends butt against each other, or against a stop, in the center of a splice.

Butt Wrap: Tape wrapped around an object or conductor in an edge-to-edge condition.

Byte: Typically a group of eight binary digits.

Cable: A stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors (multiple-conductor cable). In fiber optics, a jacketed fiber or jacketed bundle in a form which can be terminated.

Cable Assembly: Typically, the cable and associated connectors; ready to install.

Cable Clamp: A device used to give mechanical support to the wire bundle or cable at the rear of a plug or receptacle.

Cable Clamp Adapter: A mechanical adapter that attaches to the rear of a plug or receptacle to allow the attachment of a cable clamp.

Cable Core: The portion of an insulated cable lying under a protective covering.

Cable Core Binder: A wrapping of tapes or cords around the conductors of a multiple-conductor cable used to hold them together.

Cable Filler: The material used in multiple-conductor cables to occupy the interslices formed by the assembly of the insulated conductors, thus forming a cable core.

Cable Rack: The vertical or horizontal open support (usually made of aluminum or steel) that is attached to a ceiling or wall.

Cable Sheath: The overall protective covering applied to cables.

Cable Tray: A ladder, trough, solid-bottom or channel raceway system intended for, but not limited to, the support of telecommunications media (e.g., cable).

Cable Vulcanizer: Compression molding machine used to repair cable jacketing that has had a part removed for splicing, for adding connectors or other devices, or for replacing damaged sections.

Cabling: (1) A combination of all cables, wire, cords and connecting hardware. (2) Twisting together two or more insulated conductors by machine to form a cable. In fiber optics, a method by which a group or bundle of fibers is mechanically assembled.

Cabling Factor: Used in the formula for calculating the diameter of an unshielded, unjacketed cable. $D = Kd$, where D is the cable diameter, K is the factor and d is the diameter of one insulated conductor.

Campus: The building and grounds of a complex (e.g. a university, college, industrial park or military establishment).

Canadian Standards Association (CSA): A non-profit independent organization which operates a listing service for electrical and electronic materials and equipment. The Canadian counterpart of the Underwriters Laboratories.

Capacitance: The ratio of the electrostatic charge on a conductor to the potential difference between the conductors required to maintain that charge.

Capacitance, Direct: The capacitance measured from one conductor to another conductor through a single insulating layer.

Capacitance, Mutual: The capacitance between two conductors (typically of a pair) with all other conductors, including shield, short circuited to ground.

Carrier: The woven element of a braid consisting of one or more ends (strands) which creates the interlaced effect. Also, a spindle, spool, tube, or bobbin (on a braiding machine) containing yarn or wire, employed as a braid.

Cellular Plastics: Expanded or "foam," consists of individual closed cells of inert gas suspended in a plastic medium, resulting in a desirable reduction of the dielectric constant.

Central Office: The place where communications common carriers terminate customer lines and locate switching equipment that interconnects those lines.

Certificate of Compliance (C of C): A written statement; normally generated by a Quality Control Department, which states that the product being shipped meets customer's specifications.

Certified Test Report (CTR): A report reflecting actual test data on the cable shipped. Tests are normally conducted by the Quality Control Department, and show that the product being shipped meets the required test specifications.

Characteristic Impedance: The impedance that, when connected to the output terminals of a transmission line, of any length, makes the line appear indefinitely long.

Chlorosulfonated Polyethylene (CSPE): A rubbery polymer used for insulations and jackets. Manufactured by E.I. DuPont under the trade name of Hypalon.

Cigarette Wrap: Tape insulation wrapped longitudinally instead of spirally over a conductor.

Glossary

- Circuit:** A complete path over which electrons can flow from the negative terminals of a voltage source through parts and wires to the positive terminals of the same voltage source.
- Circuit Sizes:** A popular term for building wire sizes 14 through 10 AWG.
- Circular Mil:** The area of a circle one mil (.001") in diameter; 7.854×10^{-7} sq. in. Used in expressing wire cross sectional area.
- Cladding:** Method of applying a layer of metal over another metal whereby the junction of the two metals is continuously welded. In fiber optics, a sheathing intimately in contact with the core of a higher refractive index material which serves to provide optical insulation and protection to the reflection interface.
- Closed End Splice:** An insulated splice in which two or more wires overlap and enter the splice from the same end of the barrel.
- Closet, Telecommunications:** An enclosed space for housing telecommunications equipment, cable terminations, and cross-connect cabling. The closet is the recognized location of the cross-connect between the backbone and horizontal facilities.
- Coaxial Cable:** A cable consisting of two cylindrical conductors with a common axis, separated by a dielectric.
- Coaxial Connector:** A connector that has a coaxial construction and is used with coaxial cable.
- Coherent Source:** (fiber optic) A light source which emits a very narrow, unidirectional beam of light of one wavelength (monochromatic).
- Coil Effect:** The inductive effect exhibited by a spiral-wrapped shield, especially above audio frequencies.
- Cold Flow:** Permanent deformation of the insulation due to mechanical force of pressure (not due to heat softening).
- Color Code:** A color system for wire or circuit identification by use of solid colors, tracers braids, surface printing, etc.
- Commercial Building:** A building or portion thereof, that is intended for office use.
- Common Axis Cabling:** In multiple cable constructions, a twisting of all conductors about a "common axis" to result in smaller diameter constructions. Tends to result in greater susceptance to electromagnetic and electrostatic interference.
- Compact Conductor:** Stranded conductor rolled to deform the round wires to fill the normal interstices between the wires in a strand.
- Composite (Clad) Wire:** A wire having a core of one metal with a fused outer shell of different metals.
- Composite Conductor:** Two or more strands of different metals assembled and operated in parallel.
- Compound:** An insulating or jacketing material made by mixing two or more ingredients.
- Compression Cable:** A pipe type cable in which the pressure medium is separated from the insulation by a membrane or sheath.
- Concentric:** A central core surrounded by one or more layers of helically wound strands in a fixed round geometric arrangement.
- Concentric-Lay Cable:** A concentric-lay conductor, or a multiple-conductor cable composed of a central core surrounded by one or more layers of helically laid insulated conductors.
- Concentric Strand:** A strand that consists of a central wire or core surrounded by one or more layers of spirally laid wires.
- Concentricity:** The measurement of the location of the center of the conductor with respect to the geometric center of the circular insulation.
- Conductance:** The ability of a conductor to carry an electric charge. The ratio of the current flow to the potential difference causing the flow. The reciprocal of resistance.
- Conductivity:** The capacity of a material to carry electrical current – usually expressed as a percentage of copper conductivity (copper being 100%).
- Conductor:** A wire (or combination of wires not insulated from one another) suitable for carrying electric current.
- Conduit:** A rigid or flexible metallic or nonmetallic raceway of circular cross section through which cables can be pulled or housed.
- Connecting Hardware:** A device providing mechanical cable terminations.
- Connector:** A device used to provide rapid connect/disconnect service for electrical cable and wire terminations.
- Contact:** The part of a connector which actually carries the electrical current. Contacts are touched together or separated to control the flow of electricity.
- Contact Inspection Hole:** A hole in the cylindrical rear portion of contact used to check the depth to which a wire has been inserted.
- Contact Size:** The largest size wire which can be used with the specific contact. Also, the diameter of the engagement end of the pin.
- Continuity Check:** A test to determine whether electrical current flows continuously throughout the length of a single wire or individual wires in a cable.
- Continuous Vulcanization:** Simultaneous extrusion and vulcanization of rubber-like wire coating materials.
- Contrahelical:** Cable spiralling in an opposite direction than the preceding layer within a wire or cable.
- Control Cable:** A multiconductor cable made for operation in control of signal circuits.
- Controlled Impedance Cable:** Package of two or more insulated conductors where impedance measurements between respective conductors are kept essentially constant throughout the entire length.
- Copolymer:** A compound resulting from the polymerization of two different monomers.
- Copper Clad:** Steel with a coating of copper welded to it before drawing as opposed to copper-plated. Synonymous with Copperweld.
- Copperweld:** The trade name of Flexo Wire Division (Copperweld Steel Corp.) for their copper-clad steel conductors.
- Cord:** A small, flexible insulated cable.
- Cord Set:** Portable cords fitted with a wiring device at one or both ends.
- Cord, Telecommunications:** A cable using stranded conductors for flexibility as in distribution cords or line cords. Line cords can also use tinsel conductors.
- Core:** In cables, a component or assembly of components over which other materials are applied, such as additional components, shield sheath, or armor. In fiber optics, the transparent glass or plastic section with a high refractive index through which the light travels by internal reflections.
- Corona:** A discharge due to ionization of air around a conductor due to a potential gradient exceeding a certain critical value.
- Corona Resistance:** The time that the insulation will withstand a specified level of field-intensified ionization that does not result in the immediate complete breakdown of the insulation.
- Corrosion:** The destruction of the surface of a metal by chemical reaction.
- Coupling Loss:** (fiber optic) Signal losses due to small differences in numerical aperture, core diameter, core concentricity, and tolerances in splicing connectors when two fibers are aligned. Also known as Splicing Loss and Transfer Loss.
- Coupling Ring:** A device used on cylindrical connectors to lock plug and receptacle together.
- Coverage:** The calculated percentage which defines the completeness with which a metal braid covers the underlying surface. The higher percentage of coverage, the greater the protection against external interference.
- Covering:** Textile braid or jacket of rubber plastics, or other materials applied over wire and cables to provide mechanical protection and identification.
- Crazing:** The minute cracks on the surface of plastic materials.
- Creep:** The dimensional change with time of a material under load.
- Creepage:** The conduction of electricity across the surface of a dielectric.
- Creepage Path:** The path across the surface of a dielectric between two conductors.
- Creepage Surface:** An insulating surface which provides physical separation as a form of insulation between two electrical conductors of different potential.
- Crimp:** Act of compressing a connector barrel around a cable in order to make an electrical connection.
- Crimp Termination:** Connection in which a metal sleeve is secured to a conductor by mechanically crimping the sleeve with pliers, presses, or automated crimping machines.

Glossary

Cross-Connect: A facility enabling the termination of cable elements and their interconnection, and/or cross-connection, primarily by means of a patch cord or jumper.

Cross-Linked: Inter-molecular bonds between long chain thermoplastic polymers by chemical or electron bombardment means. The properties of the resulting thermosetting material are usually improved.

Crosstalk: Undesired electrical currents in conductors caused by electromagnetic or electrostatic coupling from other conductors or from external sources. Also, leakage of optical power from one optical conductor to another.

CSA: CSA International, Canadian Standards Association.

C-SJ: Same as SJ except extra-flexible conductor.

C-SJO: Same as SJO except extra-flexible conductor.

Cure: To change the physical properties of a material by chemical reaction.

Curing Cycle: The time, temperature, and pressure required for curing.

Curl: The degree to which a wire tends to form a circle after removal from a spool. An indication of the ability of the wire to be wrapped around posts in long runs.

Current: The rate of transfer of electricity. Practical unit is the ampere which represents the transfer of one coulomb per second. In a simple circuit, current (I) produced by a cell or electromotive force (E) when there is an external resistance (R) and internal resistance (r) is:

$$I = \frac{E}{R + r}$$

Current Carrying Capacity: The maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations.

Customer Premises: Building(s) with grounds and appurtenances (belongings) under the control of the customer.

Cut-Through Resistance: The ability of a material to withstand mechanical pressure, usually a sharp edge or small radius, without separation.

Cycle: The complete sequence including reversal of the flow of an alternating electric current.

Decibel (dB): A unit to express differences of power level. Used to express power gain in amplifiers or power loss in passive circuits or cables.

Delay Line: A cable made to provide very low velocity of propagation with long electrical delay for transmitted signals.

Demarcation Point: A point where the operational control or ownership changes.

Depth of Crimp: Thickness of the crimped portion of a connector measured between two opposite points on the crimped surface.

Derating Factor: A factor used to reduce the current carrying capacity of a wire when used in environments other than that for which the value was established.

Detector: (fiber optic) A device that picks up light from fiber and converts the information into an electrical signal.

Device, As Related to a Work Station: An item such as a telephone, personal computer, or graphic or video terminal.

Device, As Related to Protection: A protector, a protector mount, a protector unit, or a protector module.

Dielectric: An insulating medium which interslices between two conductors and permits electrostatic attraction and repulsion to take place across it.

Dielectric Breakdown: The voltage required to cause an electrical failure or breakthrough of the insulation.

Dielectric Constant (K): The ratio of the capacitance of a condenser with dielectric between the electrodes to the capacitance when air is between the electrodes. Also called Permittivity and Specific Inductive Capacity.

Dielectric Loss: Power dissipated in an insulating medium as the result of the friction caused by molecular motion when an AC electric field is applied.

Dielectric Strength: The voltage which an insulation can withstand before breakdown occurs. Usually expressed as a voltage gradient (such as volts per mil).

Dielectric Test: A test in which a voltage higher than the rated voltage is applied for a specified time to determine the adequacy of the insulation under normal conditions.

Digital: Transmission data representative by discrete characters.

Dip Coating: An insulating coating applied to the conductor by passing the conductor through an applicator containing liquid insulating medium.

Direct Burial Cable: A cable installed directly in the earth.

Direct Capacitance: The capacitance measured directly from conductor to conductor through a single insulating layer.

Direct Current (d.c.): An electric current which flows in only one direction.

Direct Current Resistance (DCR): The resistance offered by any circuit to the flow of direct current.

Direction of Lay: The lateral direction in which the strands of a conductor run over the top of the cable conductor as they recede from an observer looking along the axis of the conductor or cable. Also applies to twisted cable.

Discrete Wiring: Wire or wires having distinct identity and purpose.

Dispersion: (fiber optic) The variation of the refractive index of a material with wavelength, causing light of different wavelengths to travel at different velocities in the material.

Disruptive Discharge: A sudden, large increase in current through an insulation medium due to the complete failure of the medium under the electrostatic stress.

Dissipation Factor: The tangent of the loss angle of the insulating material. (Also referred to as loss tangent, $\tan \delta$, and approximate power factor.)

Distribution Cable: In telecommunications and CATV systems, the transmission cable between the distribution amplifier and the drop wire.

Distribution Frame: A structure with terminations for connecting the permanent cabling of a facility in such a manner that interconnection or cross-connections may be readily made.

Disturbed Conductor: A conductor that receives energy generated by the field of another conductor or an external source such as a transformer.

Drain Wire: In a cable, the uninsulated wire laid over the component or components and used as a ground connection.

Draw Feed Stock: Rod or wire that is subsequently drawn to a smaller size.

Drawing: In wire manufacture, pulling the metal through a die or series of dies to reduce diameter to a specified size.

Drop Ceiling: See False Ceiling.

Drop Wire: In telecommunications and CATV systems, the transmission cable from the distribution cable to a dwelling.

Dual Coaxial Cable: Two individually insulated conductors laid parallel or twisted and placed within an overall shield and sheath.

Duct: a) A single enclosed raceway for wires or cables. See also Conduit, Raceway; b) a single enclosed raceway for wires or cables usually used in soil or concrete, c) an enclosure in which air is moved. Generally part of the HVAC system of a building.

Duplex: Two way data transmission on a four-wire transmission line or two fiber.

Duplex Cable: (1) A cable composed of two insulated single conductor cables twisted together. (2) A cable composed of two fibers typically 62.5/125 μm Multi-Mode, placed in parallel under a thermoplastic sheath.

Duplex Parallel: Typically used in the thermocouple industry to denote two parallel conductors of dissimilar metals insulated in parallel without twist and jacketed. Commonly applied to thermocouple grades and extension wires.

Eccentricity: Like concentricity, a measure of the center of a conductor's location with respect to the circular cross section of the insulation. Expressed as a percentage of displacement of one circle within the other.

Eddy Current: Circulating currents induced in conducting materials by varying magnetic fields.

Elastomer: A rubber or rubber-like material which will stretch repeatedly to 200 percent or more and return rapidly and with force to its approximate original shape.

Electro-Tinned: Electrolytic process of tinning wire using pure tin.

Electrode: A conductor through which a current enters or leaves a nonmetallic conductor.

Glossary

- Electromagnetic Coupling:** Energy transfer by means of a varying magnetic field.
- Electromagnetic Field:** A rapidly moving electric field and its associated moving magnetic field.
- Electromagnetic Induction:** The production of a voltage in a coil due to a change in the number of magnetic lines of forces (flux linkages) passing through the coil.
- Electromagnetic Interference (EMI):** The interference in signal transmission or reception resulting from the radiation of electrical and magnetic fields. Synonym: Radio Frequency Interference.
- Electromotive Force (e.m.f.):** Pressure or voltage. The force which causes current to flow in a circuit.
- Electronic Wire and Cable:** A length of conductive or semiconductive material used in an electronic application.
- Electrostatic:** Pertaining to static electricity, or electricity at rest. An electric charge, for example.
- Elongation:** The fractional increase in the length of a material stressed in tension.
- Embossing:** A marker identification by means of thermal indentation leaving raised lettering on the sheath material of cable.
- Emergency Overload:** Load which occurs when larger than normal currents are carried through a cable or wire over a certain period of time.
- Enameled Wire:** A conductor with a baked-on enamel film insulation. In addition to magnet wire, enameled insulation is used on thermocouple type wires and other wires.
- Ends:** In braiding, the number of essentially parallel wires of threads on a carrier.
- Energize:** To apply rated voltage to a circuit or device in order to activate it.
- Entrance Facility, Telecommunications:** An entrance to a building for both public and private network service cables (including antennae) including the entrance point at the building wall and continuing to the entrance room or space.
- Entrance Point, Telecommunications:** The point of emergence of telecommunications conductors through an exterior wall, a concrete floor slab, or from a rigid metal conduit or intermediate metal conduit.
- Entrance Room or Space, Telecommunications:** A space in which the joining of inter- or intra-building telecommunications backbone facilities takes place. An entrance room may also serve as an equipment room.
- Equilay:** More than one layer of helically laid wires with the direction of lay reversed for successive layers, but with the length of lay the same for each layer.
- Equipment Room, Telecommunications:** A centralized space for telecommunications equipment that serves the occupants of the building. An equipment room is considered distinct from a telecommunications closet because of the nature of complexity or the equipment.
- Etched Wire:** A process applied to fluoroplastic wire in which the wire is passed through a sodium bath to create a rough surface to allow epoxy resin to bond the fluoroplastic.
- Exit Angle:** The angle between the output radiation vectors and the axis of the fiber or fiber bundle.
- External Interference:** The effects of electrical waves or fields which cause sounds other than the desired signal; static.
- External Wiring:** Electronic wiring which interconnects subsystems within the system.
- Extruded Cable:** Cable with conductors which are uniformly insulated and formed by applying a homogeneous insulation material in a continuous extrusion process.
- Extrusion:** Method of continuously forcing plastic, rubber, or elastomer material through an orifice to apply insulation or jacketing over a conductor or cable core.
- False Ceiling:** A ceiling that creates an area or space between the ceiling material and the structure above the material. Synonym: Drop Ceiling, Suspended Ceiling.
- Farad:** A unit of electrical capacity.
- Fatigue Resistance:** Resistance to metal crystallization which leads to conductors or wires breaking from flexing.
- Feed-Through Insulators:** Insulators that carry a metal conductor through the chassis while preventing the 'hot' lead from shorting to the ground chassis.
- Feedback:** Energy that is extracted from a high-level point in a circuit and applied to a lower level. Positive feedback reduces the stability of a device and is used to increase the sensitivity or produce oscillation in a system. Negative feedback, also called inverse feedback, increases the stability of a system as the feedback improves stability and fidelity.
- Feeder Cable:** In telecommunication or CATV systems, the transmission cable from the head end (signal pickup) to the trunk amplifier. Also called a Trunk Cable.
- Feedthrough:** (1) A conductor that connects patterns on opposite sides of a PCB. Also called Interfacial Connection. (2) A connector or terminal block, usually having double-ended terminals which permit simple distribution and bussing of electrical circuits.
- Ferrous:** Composed of and/or containing iron. A ferrous metal exhibits magnetic characteristics.
- Ferrule:** A short tube used to make solderless connections to shielded or coaxial cable.
- Fiber:** A thread or threadlike structure. Also, a single discrete element used to transmit optical (light wave) information.
- Fiber Dispersion:** (fiber optic) Pulse spreading in a fiber caused by differing transit times of various modes.
- Fiber Optics:** A lightwave or optical communications system in which electrical information is converted to light energy, transmitted to another location through optical fibers, and is there converted back into electrical information.
- Fiber Tubing:** A loose, crush-resistant cylinder applied over individual fibers to provide mechanical protection.
- Field:** An area of influence around a magnet or electric charge.
- Field Coil:** A suitable insulated winding to be mounted on a field pole to magnetize it.
- Figure 8 Cable:** An aerial cable configuration in which the conductors and the steel strand which supports the cable are integrally jacketed. A cross section of the finished cable approximates the figure "eight."
- Filament:** Fiber characterized by extreme length.
- Filled Cable:** A telephone cable construction in which the cable core is filled with a material that will prevent moisture from entering or passing through the cable.
- Filler:** (1) A material used in multiconductor cables to occupy large interstices formed by the assembled conductors. (2) An inert substance added to a compound to improve properties or decrease cost.
- Film:** A thin, plastic sheet.
- Fine Stranded Wire:** Stranded wire with component strands of 36 AWG or smaller.
- Firestop:** A material, device, or assembly of parts installed in a cable system in a fire-rated wall or floor to prevent passage of flame, smoke, or gasses through the rated barrier.
- Flame Resistance:** The ability of a material not to propagate flame once the heat source is removed.
- Flammability:** The measure of the material's ability to support combustion.
- Flashover:** A disruptive discharge around or over the surface of a solid or liquid insulator.
- Flat Braid:** A woven braid of tinned copper strands rolled flat at time of manufacture to a specified width.
- Flat Cable:** A cable with two smooth or corrugated but essentially flat surfaces.
- Flat Conductor:** A wire having a rectangular cross section as opposed to a round or square conductor.
- Flat Conductor Cable:** A cable with a plurality of flat conductors.
- Flex Life:** The measurement of the ability of a conductor or cable to withstand repeated bending.
- Flexibility:** The ease with which a cable may be bent.
- Flexible:** That quality of a cable or cable component which allows for bending under the influence of outside force, as opposed to limpness which is bending due to the cable's own weight.
- Floating:** Referring to a circuit which has no connection to ground.
- Flux:** (1) The lines of force which make up an electrostatic field. (2) The rate of flow of energy across or through a surface. (3) A substance used to promote or facilitate fusion.
- FNC:** Federal Networking Council (formerly FRICC).
- Foamed Plastics:** See Cellular Plastic
- Foil:** A thin, continuous sheet of metal.

Glossary

Free Connector: A connector for attachment to the free end of a wire or cable.

Frequency: The number of times a periodic action occurs in a unit of time. The number of cycles that an electric current completes in 1 second.

Frequency Response: The characteristic of a device denoting the range of frequencies over which it may be used effectively.

Funnel Entry: Flared or widened entrance to a terminal or connector wire barrel.

Fuse Wire: Wire made from an alloy that melts at a relatively low temperature.

Fused Coating: A metallic coating which has been melted and solidified, forming a metallurgical bond to the base material.

Fused Conductors: Individual strands of heavy tinned copper wire stranded together and then bonded together by induction heating.

Fused Spiral Tape: A PTFE insulated hookup wire. The spiral wrapped conductor is passed through a sintering oven where overlaps are fused together.

Gain: The increase of voltage, current, or power over a standard or previous reading. Usually expressed in decibels.

Galvanometer: An instrument for detecting or measuring small electrical current.

Gas Filled Cable: A self-contained pressure cable in which the pressure medium is an inert gas having access to the insulation.

Gauge: A term used to denote the physical size of a wire.

Giga: A numerical prefix denoting one billion (10^9).

Gigahertz (GHz): A unit of frequency equal to one billion hertz.

Gimmick: A short length of wire soldered onto a circuit component and used as a small adjustable capacitor.

Graded-Index: A type of optical fiber in which the refractive index of the core is in the form of a parabolic curve, decreasing toward the cladding. This type of fiber provides high bandwidth capabilities.

Ground: A conducting connection, whether intentional or accidental, between an electrical circuit (e.g. telecommunications) or equipment and the earth, or to some conducting body that serves in place of the earth.

Ground Conductor: A conductor in a transmission cable or line that is grounded.

Ground Insulation: The insulation used between a winding and the magnetic core or other structural parts, usually at ground potential.

Ground Loop: The generation of undesirable current flow within a ground conductor, owing to the circulation currents which originate from a second source of voltage.

Ground Plane: Expanded copper mesh which is laminated into some flat cable constructions as a shield.

Ground Potential: Zero potential with respect to the ground or earth.

Hard Drawn Copper Wire: Copper wire that has not been annealed after drawing.

Harness: An arrangement of wires and cables usually with many breakouts, which have been tied together or pulled into a rubber or plastic sheath, used to interconnect an electric circuit.

Hash Mark Stripe: A non-continuous helical stripe applied to a conductor for identification.

Heat Distortion: Distortion of flow of a material or configuration due to the application of heat.

Heat Seal: Method of sealing a tape wrap jacket by means of thermal fusion.

Heater Cord: Flexible stranded copper conductor, cotton wrapped, with rubber insulation and asbestos roving.

Helical Stripe: A continuous, colored, spiral stripe applied to a conductor for circuit identification.

Helix: Spiral winding.

Henry: The unit of inductance.

Hertz (Hz): A term replacing cycles-per-second as an indication of frequency.

Heterogeneous Insulation: A cable insulating system composed of two or more layers of different insulating materials.

High Temperature Wire and Cable: Electrical wire and cables having thermal operating characteristics of 150°C and higher.

High Voltage: Generally, a wire or cable with an operating voltage of over 600 volts.

Holding Strength: Ability of a connector to remain assembled to a cable when under tension.

Homogeneous Insulation: A complete cable insulation structure whose components cannot be identified as layers of different materials.

Hook-up Wire: A wire used for low current, low voltage (under 1000 volts) applications within enclosed electronic equipment.

Horizontal Cabling: The wiring/cabling between the telecommunications outlet/connector and the horizontal cross-connect.

Horizontal Cross-Connect: A cross-connect of horizontal cabling to other cabling, e.g. horizontal, backbone, or equipment.

Hot Stamping: Method of alpha numerical coding. Identification markings are made by pressing heated type and marking foil into softened insulation surfaces. See Surface Printing.

Hot Tin Dip: A process of passing bare wire through a bath of molten tin to provide a coating.

Hybrid Cable: An assembly of 2 or more cables (of the same or different types or categories) covered by one overall sheath.

Hygroscopic: Capable of absorbing moisture from the air.

Hypalon: DuPont's trade name for their chlorosulfonated polyethylene, an ozone resistant synthetic rubber.

Impact Tool: Device used to punch new conductor onto ID's. This tool is typically equipped with a cutting blade for either 66 or 110 blocks.

Impedance: The total opposition that a circuit offers to the flow of alternating current or any other varying current at a particular frequency. It is a combination of resistance R and reactance X, measured in ohms.

Impedance Matching Transformer: A transformer designed to match the impedance of one circuit to that of another (BALUN).

Impulse: A surge of unidirectional polarity.

Impulse Strength: The voltage breakdown of insulation under voltage surges on the order of microseconds in duration.

Impulse Test: An insulation test in which the voltage applied is an impulse voltage of specified wave shape.

Incoherent Source: (fiber optic) A light source which emits wide, diffuse beams of light of many wave lengths.

Index Matching Fluid: (fiber optic) Fluid with refractive index same as fiber core; used to fill air gap between fiber ends at connectors.

Index of Refraction: The ratio of light velocity in a vacuum to its velocity in a given transmitting medium.

Inductance: The property of a circuit or circuit element that opposes a change in current flow thus causing current changes to lag behind voltage changes. It is measured in henrys.

Inductive Coupling: Crosstalk resulting from the action of the electromagnetic field of one conductor on the other.

Infrastructure, Telecommunications: A collection of those telecommunications components excluding equipment, that together provide the basic support for the distribution of all information within a building or campus.

Insertion Loss: As measure of the attenuation of a device by determining the output of a system before and after the device is inserted into the system.

Insertion Tool: A small, hand-held tool used to insert contacts into a connector.

Insulated Wire: A conductor of electricity covered with a non-conducting material.

Insulating Joint: A device which mechanically couples and electrically insulates the sheath and armor of contiguous lengths of cable.

Insulation: A material having high resistance to the flow of electric current. Often called a dielectric in radio frequency cable.

Insulation Adhesion: The degree of tightness of the insulation over the base conductor, measured in terms of force required to remove a specified length of insulation from the wire.

Insulation Crimp: The area of a terminal, splice or contact that has been formed around the insulation of the wire.

Insulation Grip: Extended cylinders at the rear of crimp-type contacts designed to accept the bared wire and a small length of its insulation.

Insulation Piercing: A method of crimping whereby lances cut the insulation of the wires and enter into the strands to make electrical contact.

Glossary

- Insulation Resistance:** The ratio of the applied voltage to the total current between two electrodes in contact with a specific insulation usually expressed in megohms-M feet.
- Insulation System:** All of the insulation materials used to insulate a particular electrical or electronic product.
- Integral Belt:** A layer of insulation or semiconductive material applied by extrusion over two or more insulated, twisted or parallel conductors, to form a round smooth diameter.
- Interconnect:** A connection scheme that provides for the direct connection of individual cables to another cable or to an equipment cable without a patch cord.
- Interconnecting Cable:** The wiring between modules, between units, or the larger portions of a system.
- Interconnecting Wire:** The physical wiring between components (outside a module) between modules, between units or between larger portions of a system or systems.
- Interconnection:** Mechanically joining devices together to complete an electrical circuit.
- Interface:** The two surfaces on the contact side of both halves of a multiple-contact connector which face each other when the connector is assembled.
- Intermediate Cross-Connect:** A cross-connect between 1st level and 2nd level backbone cabling.
- Internal Wiring:** Electronic wiring which interconnects components, usually within a sealed subsystem.
- Interstices:** Voids or valleys between individual strands in a conductor or between insulated conductors in a multiconductor cable.
- Ionization Voltage (Corona Level):** The minimum value of falling rms voltage which sustains electrical discharge within the vacuous or gas-filled spaces in the cable construction or insulation.
- Irradiation:** In insulations, the exposure of the material to high energy emissions for the purpose of favorably altering the molecular structure.
- Jack:** A plug-in type terminal widely used in electronic apparatus for temporary connections.
- Jacket:** An outer protective sheath over primary insulation, braids, shields, cable components, or over the cable itself. In fiber optics, a covering, over a fiber, bundle of fibers, or cable which protects against the environment.
- JAN Specification:** Joint Army-Navy specification (replaced by current Military Specifications).
- Jumper:** An assembly of twisted pairs without connectors, used to join telecommunications circuits/links at the cross-connect.
- Junction:** A point in a circuit where two or more wires are connected.
- Keying:** The mechanical feature of a connector system that guarantees correct orientation of a connection, or prevents the connection to a jack, or to an optical fiber adapter of the same type intended for another purpose.
- Kynar:** Pennwalt trade name for polyvinylidene fluoride. Typically used as insulation for wire wrap wire.
- Lacing and Harnessing:** A method of grouping wires by securing them in bundles of designated patterns.
- Lacquer:** A liquid resin or compound applied to textile braid to prevent fraying, moisture absorption, etc.
- Laminated Tape:** A tape consisting of two or more layers of different materials bonded together.
- Laser Diode:** (fiber optic) A semiconductor diode that, when pulsed, a laser diode emits coherent light.
- Launch Angle:** (fiber optic) The angle between the radiation vector and the axis of the fiber or fiber bundle.
- Lay:** The length measured along the axis of a wire or cable required for a single strand (in stranded wire) or conductor (in cable) to make one complete turn about the axis of the conductor or cable.
- Layer:** Consecutive turns of a coil lying in a single plane.
- Leaching and Non-Leaching:** In a leaching wire the plasticizer will migrate when exposed to heat. A non-leaching wire will retain its plasticizer under extreme temperature conditions and remain flexible after baking.
- Lead:** A wire, with or without terminals, that connects two points in a circuit.
- Lead Cured:** A cable that is cured or vulcanized in a metallic lead mold.
- Lead Dress:** The placement or routing of wire and component leads in an electrical circuit.
- Lead-in:** The conductor or conductors that connect the antenna proper to electronic equipment.
- Leakage Current:** The undesirable flow of current through or over the surface of an insulation.
- Life Cycle:** A test to determine the length of time before failure in a controlled, usually accelerated, environment.
- Light Commercial Building:** A building or portion thereof that is intended for use with one to four (1-4) non-residential exchange access lines per tenant.
- Light Intensity Ratio:** (fiber optic) Ratio of input light intensity to the output light intensity.
- Light Source:** (fiber optic) An object capable of emitting light. In fiber optics, the light source is normally an LED or a laser.
- Lightguide:** (fiber optic) A flexible bundle of fibers used to transmit light.
- Lightwave Communications:** (fiber optic) Communications using light to carry the information.
- Limits of Error:** The maximum deviation (in degrees of percent) of a thermocouple or thermocouple extension wire from standard emf-temperature to be measured.
- Limpness:** The ability of a cable to lay flat or conform to a surface.
- Line Balance:** The degree to which the conductors of a cable are alike in their electrical characteristics with respect to each other, to other conductors, and to ground.
- Line Drop:** A voltage loss occurring between any two points in a transmission line, due to the resonance, reactance or leakage of the line.
- Line Loss:** The total of the various energy losses occurring in a transmission line.
- Line Voltage:** Voltage existing in a cable or circuit.
- Link:** An assembly of telecommunications facilities between two points, not including terminal equipment.
- Listed:** Equipment included in a list published by an organization, acceptable to the authority having jurisdiction, that maintains periodic inspection of production of listed equipment, and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.
- Local Area Network (LAN):** A geographically limited communications network intended for the local transport of data, video, and voice.
- Longitudinal Shield:** A tape shield, flat or corrugated, applied longitudinally with the axis of the core being shielded.
- Longitudinal Wrap:** Tape applied longitudinally with the axis of the core being covered.
- Loop Resistance:** The total resistance of two conductors measured round trip from one end. Commonly used term in the thermocouple industry.
- Looping-in:** Wiring method which avoids tee joints by carrying the conductor or cable to and from the point to be supplied.
- Loss:** Energy dissipated without accomplishing useful work.
- Loss Factor:** The product of the dissipation and dielectric constant of an insulating material.
- Lossy Line:** A cable having large attenuation per unit of length.
- Low Loss Dielectric:** An insulating material that has a relatively low dielectric loss, such as polyethylene or Teflon.
- Low Noise Cable:** Cable configuration specially constructed to eliminate spurious electrical disturbances caused by capacitance changes or self-generated noise induced by either physical abuse or adjacent circuitry.
- Low Tension:** Low voltage, as applied to ignition cable.
- Lug:** Termination, usually crimped or soldered to the conductor, with provision for screwing on to the terminal.
- m:** Meter.
- Magnet Wire:** Insulated wire intended for use in windings on motor, transformer, and other coils for electromagnetic devices.
- Magnetic Field:** The region within which a body or current experiences magnetic force.
- Magnetic Flux:** The rate of flow of magnetic energy across or through a surface (real or imaginary).

Glossary

Magnetic Noise: Caused by change in current level, e.g. ac powerline (creates magnetic field around the cable) this magnetic field causes the magnetic noise.

Main Cross-Connect: A cross-connect for 1st level backbone cables, entrance cables, and equipment cables.

Marker Tape: A tape laid parallel to the conductors under the sheath in a cable, imprinted with the manufacturer's name and the specification to which the cable is made.

Master Antenna Television (MATV): A combination of components providing multiple television receiver operations from one antenna or group of antennas normally on a single building.

Material Scattering Loss: (fiber optics) Loss due to fluctuations in the refractive index and to inhomogeneities in material composition and temperature.

Media, Telecommunications: Wire, cable, or conductors used for telecommunications.

Megarad: A unit for measuring radiation dosage.

Messenger: Supporting member, usually a high strength steel wire, used to suspend aerial cable. The messenger may be an integral part of the cable, or exterior to it (lashed messenger).

Microbending Loss: (fiber optic) Loss due to small geometrical irregularities along the core-clad interface of the fiber.

Microfarad: One-millionth of a farad, commonly abbreviated μF .

Micromicrofarad: One-millionth of a microfarad (uuf, uufd, mmf, mmfd $\mu\mu\text{F}$ are common abbreviations.)

Microwave: A short (usually less than 30 cm.) electrical wave.

Mil: A unit used in measuring diameter of a wire or thickness of insulation over a conductor. One-one thousandth of an inch (.001").

Mineral Insulated: Cable and thermocouple wire consisting of one or more conductors surrounded by magnesium oxide insulation and enclosed in a liquid-and-gas-tight metallic sheathing.

Miniature Wire: Insulated conductors of approximately 20-34 AWG.

Mis Match: A termination having a different impedance than that for which a circuit or cable is designed.

Mode: One of the components of a general configuration of a propagating wave front.

Modem: Device which places and receives data signals over a common carrier's communication facility.

Modular Jack: This term is outmoded, see Outlet/Connector, Telecommunications.

Modular Plug: A telecommunications connector for wire or cords per the Part 68 Rules. A modular plug can have 6 or 8 contact positions but not all the positions need be equipped with contacts.

Modulation: A process whereby certain characteristics of a wave, often called the carrier, are varied or selected in accordance with a modulating function.

Modulus of Elasticity: The ratio of stress to strain in an elastic material.

Moisture Absorption: The amount of moisture, in percentage, that a material will absorb under specified conditions.

Moisture Resistance: The ability of a material to resist absorbing moisture from the air or when immersed in water.

Molded Plug: A connector molded on either end of a cord or cable.

Monomer: The basic chemical unit used in building a polymer.

Motor Lead Wire: Wire which connects to the fragile magnet wire found in coils, transformers and stator or field windings.

Multiconductor: More than one conductor within a single cable complex.

Multimode Optical Fiber: An optical fiber that will allow many bound modes to propagate. The fiber may be either a graded-index or step-index fiber. See also: Optical Fiber Cable.

Multiple Conductor Cable: A combination of two or more conductors cabled together and insulated from one another and from sheath or armor where used.

Multiple Conductor Concentric Cable: An insulated central conductor with one or more tubular stranded conductors laid over it concentrically and insulated from one another.

Multiplexing: Simultaneous transmission of two or more messages over the same cable pair.

Mutual Capacitance: Capacitance between two conductors when all other conductors are connected together to shield and ground.

Mylar®: DuPont trademark for polyester film.

Nanometer (nm): One billionth of a meter (10^{-9} meter).

Nanosecond: One billionth of a second (10^{-9} seconds).

National Electric Code (NEC): A set of regulations governing construction and installation of electrical wiring and apparatus in the United States, established by the American National Board of Fire Underwriters.

Neoprene: A synthetic rubber with good resistance to oil, chemical, and flame. Also called polychloroprene.

Noise: In a cable or circuit, any extraneous signal which tends to interfere with the signal normally present in or passing through the system.

Nomex®: DuPont trademark for a temperature resistant, flame-retardant nylon.

Non-Contaminating: Type of PVC jacket material whose plasticizer will not migrate into the dielectric of a coaxial cable and thus avoids contaminating and destroying the dielectric.

Nylon: Thermoplastic with good chemical and abrasion resistance.

NVP: Nominal Velocity of Propagation.

Off Center: Conductor displaced within the cross-section of its insulation.

Offgassing: Percentage of a specified gas released during the combustion of insulation or jacketing material.

Ohm: A unit of electrical resistance.

Oil Aging: Cable aged in an accelerated manner by placement in an oil bath and heated to a pre-set temperature for a stated time.

Oil-Filled Cable: A self-contained pressure cable in which the pressure medium is low viscosity oil having access to the insulation.

Opaque: (fiber optic) Not permitting the passage of light.

Open Cell: Foamed or cellular material with cells which are generally interconnected.

Optical Communication Cable: (fiber optic) Fiber with a protective jacket around it.

Optical Conductors: (fiber optic) Materials which offer a low optical attenuation to transmission of light energy.

Optical Fiber Cable: An assembly consisting of one or more optical fibers.

Optical Fiber Duplex Adapter: A mechanical media termination device designed to align and join two duplex connectors.

Optical Fiber Duplex Connector: A mechanical media termination device designed to transfer optical power between two pairs of optical fibers.

Optical Waveguide: (fiber optic) A fiber used for optical communications. Analogous to a waveguide used for microwave communications.

Oscillatory Surge: A surge which includes both positive and negative polarity values.

Outgassing: The dissipation of gas from a dielectric evidencing decomposition.

Outlet Box, Telecommunications: A metallic or nonmetallic box mounted within a wall, floor, or ceiling and used to hold telecommunications outlet/connectors or transition devices.

Outlet/Connector, Telecommunications: A connecting device in the work area on which horizontal cable terminates.

Overall Diameter: Finished diameter over wire or cable.

Overcoat Conductor: A stranded conductor made from individual strands of tin coated wire stranded together, and then given an overall tin coat.

Overlap: The amount the trailing edge laps over the leading edge of a spiral tape wrap.

Oxygen Index: Percentage of oxygen necessary to support combustion in a gas mixture.

Ozone: Reactive form of oxygen, typically found around electrical discharges and present in the atmosphere in small quantities.

Packing Fraction: (fiber optic) The ratio of active cross-sectional area of fiber core, or cores, to the total end surface of the fiber, or fiber bundle.

Pair: Two insulated wires of a single circuit associated together, also known as a "balance" transmission line.

Parallel Pair: A duplex construction of two insulated conductors laid parallel and then covered overall with a braid or jacket.

Parallel Stripe: A stripe applied longitudinally on a wire or cable parallel to the axis of the conductor.

Glossary

- Patch Cord:** A length of cable with connectors on one or both ends used to join telecommunications links/circuits at the cross-connect.
- Patch Cord Cable:** Bulk cable used in the manufacture of patch cords.
- Patch Panel:** A cross-connect system of mateable connectors that facilitates administration.
- Pathway:** A facility for the placement of telecommunications cable. Synonym: Raceway.
- Pay-Off:** The process of feeding a cable or wire from a bobbin, reel, or other package.
- Percent Plating:** Quantity of plating on a conductor expressed as a percentage by weight.
- Percentage Conductivity:** Conductivity of a material expressed as a percentage of that of copper.
- Periodicity:** The uniformly spaced variations in the insulation diameter of a transmission cable that result in reflections of a signal, when its wavelength or a multiple thereof is equal to the distance between two diameter variations.
- Permittivity:** See Dielectric Constant.
- Phase:** An angular relationship between waves.
- Phase Shift:** A change in the phase relationship between two alternating quantities.
- Photodetector (Receiver):** Converts light energy to electrical energy.
- Pick:** Distance between two adjacent crossover points of braid filaments. The measurement in picks per inch indicates the degree of coverage.
- Picofarad:** One-millionth of one-millionth of a farad. A micromicrofarad or picofarad (abbreviation pf). (See $\mu\mu F$).
- Pigtail Wire:** Fine stranded, extra flexible, rope lay lead wire attached to a shield for terminating purposes.
- Pitch:** In flat cable, the nominal distance between the index edges of two adjacent conductors.
- Pitch Diameter:** Diameter of a circle passing through the center of the conductors in any layer of a multiconductor cable.
- Plain Conductor:** A conductor consisting of only one metal.
- Plain Weave:** A weave used on woven cables. Threads between the wires act as binders and give the cable lateral stiffness and linear flexibility. Also called Standard and Square Weave.
- Planetary Cabler:** A cabler capable of laying down any number of shielded, overbraided, or jacketed singles, pairs, called groups, or any combination of them in sequence.
- Planetary Twister:** A twisting machine whose payoff spools are mounted in rotating cradles that hold the axis of the spool in a fixed direction as the spools are revolved so no twist is built up in each wire.
- Plastic Deformation:** Change in dimensions under load that is not recovered when the load is removed.
- Plasticizer:** A chemical agent added to plastics to make them softer and more pliable.
- Plenum:** The air return path of a central air handling system, either ductwork or open space over a suspended ceiling.
- Plenum Cable:** Cable approved by a recognized agency such as UL for installation in plenums without the need for conduit.
- Plug:** The part of the two mating halves of a connector which is moveable when not fastened to the other mating half.
- Ply:** The number of individual strands or filaments twisted together to form a single thread.
- Point-to-Point:** A type of connection established between two specific locations, as between two buildings.
- Point-to-Point Wiring:** An interconnecting technique wherein the connections between components are made by wires routed between connecting points.
- Polarization:** The orientation of a flat cable or a rectangular connector.
- Polishing:** (fiber optic) Act of smoothing ends of fibers to an 'optically smooth' finish, generally using abrasive.
- Polyester:** Polyethylene terephthalate, used extensively as a moisture resistant cable core wrap.
- Polyethylene:** A thermoplastic material having excellent electrical properties.
- Polyhalocarbon:** A general name for polymers containing halogen atoms. The halogens are fluorine, chlorine, bromine and iodine.
- Polymer:** A material of high molecular weight formed by the chemical union of monomers.
- Polyolefin:** Any of the polymers and copolymers of the ethylene family of hydrocarbons.
- Polypropylene:** A thermoplastic similar to polyethylene but stiffer and having higher softening point (temperature); excellent electrical properties.
- Polyurethane:** Class of polymers known for good abrasion and solvent resistance (may be applied in solid or cellular form).
- Porosity:** Multiple voids in an insulation cross-section.
- Potting:** The sealing of a cable termination or other component with a liquid which thermosets into an elastomer.
- Power Cables:** Cables of various sizes, construction, and insulation, single or multiconductor designed to distribute primary power to various types of equipment.
- Power Factor:** The ratio of resistance to impedance. The ratio of the actual power of an alternating current to apparent power. Mathematically, the cosine of the angle between the voltage applied and the current resulting.
- Pre-Bond:** Stranded wire which has been fused, topcoat tinned, or overcoat tinned.
- Prewiring:** Wiring installed
 - Before walls are enclosed or finished.
 - In anticipation of future use or need.
- Primary:** The transformer winding which receives the energy from a supply circuit.
- Primary Insulation:** The first layer of non-conductive material applied over a conductor, whose prime function is to act as electrical insulation.
- Primary Protection:** The minimum protection required on all exposed facilities to comply with NEC requirements.
- Primary Wiring:** A printed circuit intended to provide point-to-point electrical connections.
- Programming:** Ability to select various circuit patterns by interconnecting appropriate contacts on one side of a connector plug or panel.
- Propagation Delay:** Time delay between input and output of signal.
- Propagation Time:** Time required for a wave to travel between two points on a transmission line.
- Protocol:** A set of rules for communicating.
- Proximity Effect:** Nonuniform current distribution over the cross-section of a conductor caused by the variation of the current in a neighboring conductor.
- Pull Box:** A device to access a raceway used to facilitate placing of wire or cables.
- Pull Cord/Pull Wire:** Cord or wire placed within a raceway and used to pull wire and cable through the raceway.
- Pull Strength:** See Pull Tension.
- Pull Tension:** The maximum pulling force that can be safely applied to a cable without damage.
- Pulling Eye:** A device used to pull cable into or from a duct.
- Pulse:** Energy which changes abruptly from an intensity to another. May be light energy or electrical energy.
- Pulse Cable:** A type of coaxial cable constructed to transmit repeated high voltage pulses without degradation.
- Polyvinyl Chloride (PVC):** A general purpose thermoplastic widely used for wire and cable insulations and jackets.
- Quad:** A series of four separately insulated conductors, generally twisted together in pairs. Also, a series-parallel combination of transistors with increased reliability because failure of one transistor will not disable the entire circuit.
- Quadders:** Three-bay machines which can twist four wires together and cable braided and shielded wires with varying lay lengths.
- Raceway:** Any channel designed for holding wires or cables, e.g. conduit, electrical metallic tubing, sleeves, slots, underfloor raceways, cellular floors, surface raceways, lighting fixture raceways, wireways, cable troughs, busways, auxiliary gutters, and ventilated flexible cableways. Synonym: Pathway.
- Rack:** See Cable Rack.
- Radio Frequency:** The frequencies in the electromagnetic spectrum that are used for radio communications.
- Random Winding:** A winding in rotating equipment wherein the wires do not lie in an even pattern.

Glossary

Reactance: The opposition offered to the flow of alternating current by inductance or capacitance of a compound or circuit.

Red Plaque: A powdery, brown-red growth found on silvercoated copper conductors and shield braids.

Redraw: The consecutive drawing of wire through a series of dies to reach a desired wire size.

Reducing Joint: A joint between two lengths of cable where the conductors are not the same size.

Reel: A revolvable flanged device made of wood metal, used for winding flexible metal wire or cable.

Reflection: (fiber optic) Change in direction of a light wave or ray.

Reflection Loss: The part of a signal which is lost due to reflection of power at a line discontinuity.

Refraction: (fiber optic) The bending of lightwaves or rays as they go from one material to another due to the difference in velocities in the materials.

Reinforced Sheath: The outmost covering of a cable that has cable sheath constructed in layers with the addition of a reinforcing material usually a braided fiber, molded in place between layers.

Remanence: The magnetic induction that remains in a magnetic circuit after the removal of an applied magnetomotive force.

Repeater: A device which consists of a transmitter and a receiver or transmitter, used to regenerate a signal to increase the system transmission length.

Resistance: A measure of the difficulty in moving electrical current through a medium when voltage is applied. It is measured in ohms.

Resistive Conductor: A conductor with high electric resistance.

Retractable Cord: A cord having specially treated insulation or jacket so that it will retract.

Return Loss: Backward reflected energies from uneven parts of the cable structure causing impedance variations. Return Loss is necessary for bidirectional applications.

Return Wire: A ground wire or the negative wire in a direct-current circuit.

Ribbon Cable: A flat cable of individually insulated conductors lying parallel and held together by means of adhesive or woven textile yarn.

Ridge Marker: One or more ridges running laterally along the outer surface of a plastic insulated wire for purposes of identification.

Rigid Bay: Cabling equipment that maintains component sequence, and can produce cables with distinct layers.

Rigid Coaxial Cable: Nonflexible coaxial cable, usually a metal tube armored coaxial cable.

Ring Tongue: A solderless terminal that connects wire to a stud.

Ringing Out: Locating or identifying specific conductive paths by passing current through selected conductors.

Rip-Cord: (1) Two or more insulated conductors in a parallel configuration which may be separated to leave the insulation of each conductor intact. (2) A small filament cord used to rip through the outer cable sheath.

Rope Concentric: A group of standard conductors assembled in a concentric manner.

Rope Lay Conductor: A conductor composed of a central core surrounded by one or more layers of helically laid groups of wires.

Rope Unilay: A group of stranded conductors assembled in a unilay manner.

Round Wire Shields: Shields constructed from bare, tinned, or silver plated copper wire that include braided, spiral, and reverse spiral.

Routers: A device that determines how to forward a packet toward its destination, based on tables that indicate the costs, congestion status, and other factors associated with possible routes. Also called a Level 3 Relay or an Intermediate System.

Rubber (Wire Insulation): Term used to describe wire insulations made of thermosetting elastomers, occur naturally or may be made synthetically.

Rulan: DuPont's trade name for their flame retardant polyethylene insulating material.

Screen: A shield placed over the entire core.

Secondary Insulation: A nonconductive material that protects the conductor against abrasion and provides a second electrical barrier.

Segmental Conductor: A stranded conductor consisting of three or more stranded conducting elements, each element having approximately the shape of the sector of a circle, assembled to give a substantially circular cross-section.

Selenium Cure: Process used to cure neoprene and rubber jacketed wires and cables.

Self Extinguishing: Characteristic of a material whose flame is extinguished after the igniting flame source is removed.

Semi-Conducting Jacket: A jacket having a sufficiently low resistance so that its outer surface can be kept at substantially ground potential.

Semi-Rigid: A cable containing a flexible inner core and a relatively inflexible sheathing.

Semi-Solid: An insulation cross-section having a partially open space between the conductor and the insulation perimeter.

Separator: A layer of insulating material which is placed between a conductor and its dielectric between a cable jacket and the components it covers, or between various components of a multiple-conductor cable.

Series Circuit: A circuit in which the components are arranged end-to-end to form a single path for current.

Serve: A filament or group of filaments such as fibers or wires, wound around a central core.

Serving: A wrapping applied over the core of a cable or over a wire.

Sheath: See Cable Sheath.

Shield: In cables, a metallic layer placed around a conductor or group of conductors to prevent electrostatic or electromagnetic interference between the enclosed wires or external fields.

Shield Coverage: Amount of outer cable covered by the shielding material.

Shield Effectiveness: The ability of a shield to screen out undesirable signals.

Shielded Line: A transmission line whose elements confine propagated radio waves to an essentially finite space inside a tubular conducting surface called the sheath, thus preventing the line from radiating radio waves.

Shielded-Type Cable: A cable in which the surface of the insulation is at ground potential.

Shunt Wire: A conductor joining two parts of an electric circuit to divert part of the current.

Signal: A current used to convey information, either digital, analog, audio or video.

Silicone: A material made from silicon and oxygen. Can be in thermosetting elastomer or liquid form. The thermosetting elastomer form is noted for high heat resistance.

Silicone Treating: A silicone liquid treatment applied to insulated conductors to allow for easy jacket stripping.

Sine Wave: A wave that can be expressed as the sine of a linear function of time, or space or both.

Single-ended: Unbalanced, such as grounding one side of a circuit or transmission line.

Single-Faced Tape: Fabric tape finished on one side with a rubber or synthetic compound.

Single Mode Fiber: A fiber wave guide in which only one mode will propagate. The fiber has a very small core diameter of approximately 8µm. It permits signal transmission at extremely high bandwidths and is generally used with laser diodes.

Sizing: Applying a material to a surface to fill pores.

Skeleton Braid: Widely separated braid of fiber copper, or steel, used to hold core together, for reinforcing jacket or for shielding.

Skew Rays: A ray that does not intersect the fiber axis. Generally, a light ray that enters the fiber core at a very high angle.

Skim Tape: Filled tape coated on one or both sides with a thin film of uncured rubber or synthetic compound to produce a coating suitable for vulcanization.

Skin Effect: The tendency of alternating current as its frequency increases, to travel only on the surface of a conductor.

Sleeve: A braided, knitted, or woven tube used over wires or components as insulation tubing. Also called Sleeving.

Solid Conductor: A conductor consisting of a single wire.

Source Coupling Loss: (fiber optic) Loss of light intensity as light from source passes into fiber.

Glossary

- Space, Telecommunications:** An area used for housing the installation and termination of telecommunications equipment and cable, e.g. telecommunications closets, work areas, and manhole/handholes.
- Span:** (1) In flat conductors, distance between the reference edge of the first and the last conductor. (2) In round conductors, distance between centers of the first and last conductors. (3) In aerial cable, the distance between poles or support clamps.
- Spark Test:** A test designed to locate pin-holes in the insulation of a wire or cable by application of a voltage for a very short period of time while the wire is being drawn through the electrode field.
- Specific Gravity:** The ratio of the density (mass per unit volume) of a material to that of water.
- Spectral Bandwidth:** The difference between wavelengths at which the radiant intensity of illumination is half its peak intensity.
- Spectral Response:** (fiber optic) The response of a detector (or a system) over different wavelengths.
- Spectrum:** Frequencies that exist in a continuous range and have a common characteristic.
- Speed of Light (c):** 2.998×10^8 meters per second.
- Spiral Shield:** A metallic shield of fine stranded wires applied spirally rather than braided.
- Spiral Stripe:** A color coding stripe applied helically to the surface of an insulated wire or cable.
- Spiral Wrap:** The helical wrap of a tape or thread over a core.
- Splice:** A joining of conductors generally from separate sheaths.
- Splice Closure:** A device used to protect a cable or wire splice.
- Spread Spectrum:** A modulation technique for multiple access, or for increasing immunity to noise and interference.
- Standing Wave:** The stationary pattern of waves produced by two waves of the same frequency traveling in opposite directions on the same transmission line.
- Standing Wave Ratio (SWR):** In a transmission line, waveguide, or analogous system, a figure of merit used to express the efficiency of the system in transmitting power.
- Star Topology:** A topology in which each telecommunications outlet/connector is directly cabled to the distribution device.
- Stay Cord:** A component of a cable used to anchor the cable ends at their points of termination and to keep any pull of the cable from being transferred to the electrical connections.
- Step Index Fiber:** (fiber optic) A multimode fiber consisting of a core of uniform refractive index surrounded by cladding of slightly lower refractive index.
- Strand:** One of the wires of any stranded conductor.
- Strand Lay:** The distance of advance of one strand of a spirally stranded conductor, in one turn, measured axially.
- Stranded Conductor:** A conductor composed of groups of wires twisted together.
- Strap:** Square- or rectangular-section bare conductor manufactured and used in coil form.
- Strip:** To remove insulation from a cable.
- Structural Return Loss:** Backward reflected energies from uneven parts of the cable structure causing impedance variations are termed structural return loss.
- Surface Resistivity:** The resistance of a material between two opposite sides of a unit square of its surface. It is usually expressed in ohms.
- Surge:** A temporary and relatively large increase in the voltage or current in an electric circuit or cable. Also called Transient.
- Suspended Ceiling:** See False Ceiling.
- Sweep-test:** Pertaining to cable, the frequency response is verified by generating an rf voltage whose frequency is swept repeatedly through a given frequency range at a rapid constant rate while the cable response is observed.
- Take-Up:** The process of accumulating wire or cable onto a reel, bobbin, or some other type of pack. Also, the device for pulling wire or cable through a piece of equipment or machine.
- Tank Test:** A voltage dielectric test in which the test sample is submerged in water and voltage is applied between the conductor and water as ground.
- Tape:** A relatively narrow woven or cut strip of fabric, paper, or film material.
- Tape Cable:** A form of multiple conductor consisting of parallel metal strips imbedded in insulating material.
- Tape Wrap:** A spirally applied tape over an insulated or uninsulated wire.
- Taped Insulation:** Insulation of helically wound tapes applied over a conductor or over an assembled group of insulated conductors.
- Taping:** Process of insulating continuous length, large diameter wires with tape of non-extrudable materials.
- TB:** Terminal Block.
- Tear Strength:** The force required to initiate or continue a tear in a material under specified conditions.
- Teflon®:** DuPont's Company trade name for fluorocarbon resins. FEP, PFA and TFE are typical materials.
- Tefzel®:** DuPont's trade name for a fluorocarbon material typically used as a wire wrap insulation.
- Telecommunications:** The communication of information over some distance, including interbuilding and intrabuilding distances.
- Telecommunications Closet:** See Closet, Telecommunications.
- Telecommunications Entrance Facility:** See Entrance Facility, Telecommunications.
- Telecommunications Entrance Point:** See Entrance Point, Telecommunications.
- Telecommunications Entrance Room or Space:** See Entrance Room or Space, Telecommunications.
- Telecommunications Equipment Room:** See Equipment Room, Telecommunications.
- Telecommunications Grounding Busbar:** A common point of connection for telecommunications system and bonding to ground, which is located in the telecommunications closet or equipment room.
- Telecommunications Infrastructure:** See Infrastructure, Telecommunications.
- Telecommunications Outlet/Connector:** See Outlet/Connector, Telecommunications.
- Telemetry Cable:** Cable used for transmission of information from instruments to the peripheral recording equipment.
- Temperature Rating:** The maximum temperature at which an insulating material may be used in continuous operation without loss of its basic properties.
- Tensile Strength:** The pull stress required to break a given specimen.
- Tension Member:** A member included in a fiber cable to add tensile strength.
- Terminal:** (1) A point at which information may enter or leave a communications network. (2) The input-output associated equipment. (3) A device by means of which wires may be connected to each other.
- Termination Hardware:** This term is outmoded. See Connecting Hardware.
- Test Lead:** A flexible, insulated lead wire used for making tests, connecting instruments to a circuit temporarily, or for making temporary electrical connections.
- Textile Braid:** Any braid made from threads of cotton silk, or synthetic fibers.
- Thermal Aging:** Exposure to a thermal condition or programmed series of conditions for predescribed periods of time.
- Thermocouple Lead Wire:** An insulated pair of wires used from the couple to a junction box.
- Thermoplastic:** A material which softens when heated and becomes firm on cooling.
- Thermoset:** A material which hardens or sets when heat is applied, and which, once set, cannot be resoftened by heating. The application of heat is called "curing."
- Three-Phase Current:** Current delivered through three wires, with each wire serving as a return for the other two.
- Three-Phase Three-Wire System:** An alternating current supply system comprising three conductors over which three-phase power is sent.
- Three-Wire System:** A d-c or single-phase a-c system comprising three conductors, one of which is maintained at a potential midway between the potential of the other two.
- Tin Overcoat (TOC):** Tinned copper wire, stranded, then coated with pure tin.
- Tinsel Wire:** A low voltage stranded wire, with each strand a very thin conductor ribbon spirally wrapped around a textile yarn.

Glossary

Topcoat: Bare (untinned) copper wire, stranded then coated with pure tin.

Topology: The physical or logical arrangement of a telecommunications system.

Tracer: A means of identifying polarity.

Transducer: A device for converting mechanical energy to electrical energy.

Transfer Impedance: The ratio of the source voltage of the wires inside the cable to the shield current of the cable or connectorized cable assembly.

Transition Point: A location in the horizontal cabling where flat undercarpet cable connects to round cable.

Transmission: Transfer of electric energy from one location to another through conductors or by radiation or induction fields.

Transmission Cable: Two or more transmission lines. See Transmission line.

Transmission Line: An arrangement of two or more conductors or a wave guide used to transfer signal energy from one location to another.

Transmission Loss: The decrease or loss in power during transmission of energy from one point to another. Usually expressed in decibels.

Transmission Media: The various types of wire and optical fiber cable used for transmitting voice or data signals. Typically, wire cable includes twisted pair, coaxial, and twinaxial. Optical fiber cable includes single, dual, quad stranded, and ribbon (AI).

Transmitter: The electronic package that injects an electrical signal or light signal over the transmission medium.

Transparent: (fiber optic) Transmitting rays of light so that objects can be seen through the material.

Transposition: Interchanging the relative positions of wires to neutralize the effects of induction to or from other circuits or, to minimize interference pickup by the lead-in during reception.

Tray Cable: A factory-assembled multiconductor or multipair control cable approved under the National Electrical Code for installation in trays.

Triaxial: A three-conductor cable with one conductor in the center, a second circular conductor shield concentric with the first, and third circular conductor shield insulated from and concentric with the first and second, usually with insulation, and over a braid or impervious sheath overall.

Triboelectric Noise: Noise generated in a shielded cable due to variations in capacitance between shielding and conductor as the cable is flexed.

Triple Cable: A cable composed of three insulated single conductors and one bare conductor, all twisted together. It may or may not have a common covering or binding.

True Concentric: A cable in which each successive layer has a reversed direction of lay from the preceding layer.

Trunk Cable: See Feeder Cable.

Tubing: A tube of extruded non-supported plastic material.

Twin Cable: A pair of insulated conductors twisted, sheathed, or held together mechanically and not identifiable from each other in a common covering.

Twin Coaxial: A configuration containing two separate, complete coaxial cables laid parallel or twisted around each other in one complex.

Twin Line: A transmission line which has a solid insulating material, in which the two conductors are placed in parallel to each other.

Twiner: A device for twisting together two conductors.

Twisted Pairs: A cable composed of two small insulated conductors twisted together without a common covering.

Unbalanced Line: A transmission line in which voltages on the two conductors are unequal with respect to ground.

Unidirectional Concentric Stranding: A stranding where each successive layer has a different lay length, thereby retaining a circular form without migration of strands from one layer to another.

Unidirectional Stranding: A term denoting that in a stranded conductor all layers have the same direction of lay.

Unilay Strand: A conductor constructed with a central core surrounded by more than one layer of helically-laid wires, with all layers having a common length and direction of lay.

Velocity of Propagation (VP): The speed of an electrical signal down a length of cable compared to speed in free space expressed as a percent. It is the reciprocal of the square root of the dielectric constant of the cable insulation.

Volt: A unit of electromotive force.

Voltage: The term most often used in place of electromotive force, potential difference, or voltage drop to designate the electric pressure that exists between two points and is capable of producing a current when a closed circuit is connected between two points.

Voltage Drop: The voltage developed across a component or conductor by the current in the resistance or impedance of the component or conductor.

Voltage Rating: The highest voltage that may be continuously applied to a wire in conformance with standards or specifications.

Voltage Standing Wave Ratio (VSWR): The ratio of the maximum effective voltage to the minimum effective voltage measured along the length of a mix-matched radio frequency transmission line.

Volume Resistivity (Specific Insulation Resistance): The electrical resistance between opposite faces of a 1 cm. cube of insulating material, commonly expressed in ohms/centimeter.

Vulcanization: A chemical reaction in which the physical properties of an elastomer are changed by reacting it with sulfur or other cross-linking agents.

Wall Thickness: The thickness of the applied insulation or jacket.

Water Absorption: A test to determine the water absorbed by a material after a given immersion period.

Waterblocked Cable: A cable constructed with no internal voids in order to allow no longitudinal water passage under a given pressure.

Watt: A unit of electric power.

Wave Form: A graphical representation of a varying quantity. Usually, time is represented on the horizontal axis, and the current or voltage value is represented on the vertical axis.

Wave Length: The distance, measured in the direction of propagation, of a repetitive electrical pulse or waveform between two successive points that are characterized by the same phase of vibration.

Wicking: The longitudinal flow of a liquid in a wire or cable due to capillary action.

Wire: A conductor, either bare or insulated.

Wire and Cable Marker: Device for identification marking of wire and cable.

Wire and Cable Tying, Clamping, and Harnessing Devices: Tying tapes, lacing cords, and flexible sleeveings which are used for wire and cable bundling, harnessing, and holding. Other devices include plastic ties or clamps, spiral-cut plastic tubing, and plastic U-shaped trays or ducts.

Wire and Lead Cutters: Tools for cutting range from plier type cutters to semiautomatic or fully automatic machines integrated with other wire processing operations such as stripping, forming, and terminating.

Wire Gauge: A system of numerical designation of wire sizes.

Wire Nut: A closed end splice that is screwed on instead of crimped.

Wire Wrapped Connection: A solderless connection made by wrapping bare wire around a square or rectangular terminal with a power or hand tool.

Wire Wrapping Tools: Portable electric tools and automatic stationary machines used to make solderless wrapped connections of wires to terminals.

Wiring Closet: See Telecommunications Closet.

Work Area (Work Station): A building space where the occupants interact with telecommunications terminal equipment.

Wrapper: An insulating barrier applied as a sheet or tape wrapped around a coil periphery.

Yield Strength: The minimum stress at which a material will start to physically deform without increase in load.

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